Access DB# 64373

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Gailen R. Gabel Examiner #: 76197 Date: 5/22/02
Art Unit: 1641 Phone Number 305-0807 Serial Number: 09/839,778
Mail Box and Bldg/Room Location: 7B15 Results Format Preferred (circle): PAPER DISK E-MAIL

7ED

If more than one search is submitted, please prioritize searches in order of need. mej

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Diagnostic Device + Method

Inventors (please provide full names): James Herron, Jacob Dietschi
Douglas Christensen

Earliest Priority Filing Date: 4/20/01

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Please search claims 1, 6, 14, 16, 21
and cardiac markers
myoglobin
troponin
Creatine-kinase

Thank You
Gail
1

RECEIVED
MAY 24 2002
TECHNICAL INFORMATION CENTER (STIC)

****

STAFF USE ONLY

Searcher:
Searcher Phone: Point of Contact: Alexandra Waclawiw
Searcher Location: Technical Info. Specialist CM1 6A02 Tel: 308-4491
Date Searcher Picked Up: 6-6-02
Date Completed: 6-3-02
Searcher Prep & Review Time: 14
Clerical Prep Time:
Online Time: 31

PTO-1590 (8-01)

Type of Search		Vendors and cost where applicable	
NA Sequence (#)		STN	# 339.00
AA Sequence (#)		Dialog	
Structure (#)		Questel/Orbit	
Bibliographic	V	Dr.Link	
Litigation		Lexis/Nexis	
Fulltext		Sequence Systems	
Patent Family		WWW/Internet	
Other		Other (specify)	

45-58+1
023
8
3 1

```
=> fil hcaplus
FILE 'HCAPLUS' ENTERED AT 13:12:12 ON 03 JUN 2002
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2002 AMERICAN CHEMICAL SOCIETY (ACS)
```



```
FILE COVERS 1907 - 3 Jun 2002  VOL 136 ISS 23
FILE LAST UPDATED: 31 May 2002  (20020531/ED)

 This file contains CAS Registry Numbers for easy and accurate
 substance identification.

CAS roles have been modified effective December 16, 2001. Please
check your SDI profiles to see if they need to be revised. For
information on CAS roles, enter HELP ROLES at an arrow prompt or use
the CAS Roles thesaurus (/RL field) in this file.
'OBI' IS DEFAULT SEARCH FIELD FOR 'HCAPLUS' FILE

=> d his

     (FILE 'HOME' ENTERED AT 13:01:54 ON 03 JUN 2002)

     FILE 'HCAPLUS' ENTERED AT 13:02:04 ON 03 JUN 2002
L1         45068 S IMMUNOASSAY? OR FLUOROIMMUNOASSAY?
                 E WAVEGUIDES/CT
                 E E3+ALL
L2         25610 S WAVEGUIDE#
L3            80 S L1 AND L2
L4         11627 S MULTIANALYT? OR ANALYT? (L) MULTI?
L5         24152 S (MULTIANALYT? OR ANALYT? (3A)MULTI?)/AB
L6         33202 S L4 OR L5
L7            10 S L6 AND L3
L8         19807 S CARDIAC (L) MARKER# OR TROPONIN# OR MYOGLOBIN# OR CREATINE KI
L9             2 S L8 AND L7
L10         2257 S L8 (L) (ANT OR ANST)/RL
L11           35 S L10 AND L6
L12            2 S L11 AND L2
L13            1 S L11 AND WAVEGUIDE?/AB
L14         9918 S OPTICAL (L) SENSOR#
L15            2 S L11 AND L14
L16           14 S L11 AND L1
L17            2 S L16 AND (L2 OR L14)
L18         4849 S (OPTICAL (3A) SENSOR?)/AB
L19            0 S L18 AND L11
L20            0 S L16 AND L18
L21           10 S L7 OR L9 OR L12 OR L13 OR L15 OR L17
L22            7 S L2 AND L8
L23            5 S L22 NOT L21
L24           15 S L23 OR L21
```

```
L25             7 S L8 AND WAVEGUIDE#/AB
L26            17 S L25 OR L24

     FILE 'HCAPLUS' ENTERED AT 13:12:12 ON 03 JUN 2002

=> d que l26
L1          45068 SEA FILE=HCAPLUS ABB=ON  PLU=ON  IMMUNOASSAY?/OBI OR FLUOROIMMU
                  NOASSAY?/OBI
L2          25610 SEA FILE=HCAPLUS ABB=ON  PLU=ON  WAVEGUIDE#/OBI
L3             80 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L1 AND L2
L4          11627 SEA FILE=HCAPLUS ABB=ON  PLU=ON  MULTIANALYT?/OBI OR ANALYT?/OB
                  I (L) MULTI?/OBI
L5          24152 SEA FILE=HCAPLUS ABB=ON  PLU=ON  (MULTIANALYT? OR ANALYT?
                  (3A)MULTI?)/AB
L6          33202 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L4 OR L5
L7             10 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L6 AND L3
L8          19807 SEA FILE=HCAPLUS ABB=ON  PLU=ON  CARDIAC/OBI (L) MARKER#/OBI
                  OR TROPONIN#/OBI OR MYOGLOBIN#/OBI OR CREATINE KINASE#/OBI
L9              2 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L8 AND L7
L10          2257 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L8 (L) (ANT OR ANST)/RL
L11            35 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L10 AND L6
L12             2 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L11 AND L2
L13             1 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L11 AND WAVEGUIDE?/AB
L14          9918 SEA FILE=HCAPLUS ABB=ON  PLU=ON  OPTICAL/OBI (L) SENSOR#/OBI
L15             2 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L11 AND L14
L16            14 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L11 AND L1
L17             2 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L16 AND (L2 OR L14)
L21            10 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L7 OR L9 OR L12 OR L13 OR L15
                  OR L17
L22             7 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L2 AND L8
L23             5 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L22 NOT L21
L24            15 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L23 OR L21
L25             7 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L8 AND WAVEGUIDE#/AB
L26            17 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L25 OR L24


=> d .ca l26 1-17

L26  ANSWER 1 OF 17  HCAPLUS  COPYRIGHT 2002 ACS
ACCESSION NUMBER:        2002:287374  HCAPLUS
TITLE:                   In situ observation of the adsorption behavior of heme
                         proteins using slab optical waveguide
                         spectroscopy
AUTHOR(S):               Santos, Jose H.; Matsuda, Naoki; Qi, Zhimei; Takatsu,
                         Akiko; Kato, Kenji
CORPORATE SOURCE:        AIST Tsukuba Central 5, Nanoarchitectonics Research
                         Center, Tsukuba, Ibaraki, 305-8565, Japan
SOURCE:                  Chemical Sensors (2001), 17(Suppl. B), 487-489
                         CODEN: KAGSEU
PUBLISHER:               Denki Kagakkai Kagaku Sensa Kenkyukai
DOCUMENT TYPE:           Journal
LANGUAGE:                English
AB   The adsorption behaviors of 2 important heme proteins, myoglobin and
     cytochrome c, were studied using slab optical waveguide (SOWG)
     spectroscopy on both hydrophilic and hydrophobic surfaces under various
     soln. conditions.  The SOWG cell is composed of a SiO2 plate mounted on
     hollow silicone rubber sheet and supported with 2 prism couplers.  The
     adsorbed protein film absorbed light from the evanescent field at the
     waveguide surface resulting to changes in the intensity of the
     outcoupled light.  The light absorption patterns of both proteins are time
```

dependent and change with pH and ionic strength implying that protein adsorption on SiO2 surface is affected by soln. environment. At a neutral pH, cytochrome c preferred adsorption on hydrophilic over hydrophobic surfaces while the results for myoglobin showed slight bias towards hydrophobic surface. From a methodol. point of view, SOWG spectroscopy using SiO2 plate is an appropriate tool for kinetic and mechanistic study of protein adsorption on flat surfaces.

CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 34, 66

ST adsorption heme protein silica plate slab optical **waveguide** spectroscopy

IT UV and visible spectra
(adsorption behavior of heme proteins obsd. using slab optical **waveguide** spectroscopy)

IT **Myoglobins**
RL: PRP (Properties)
(equine; adsorption behavior obsd. using slab optical **waveguide** spectroscopy of)

IT Proteins
RL: PRP (Properties)
(heme; adsorption behavior obsd. using slab optical **waveguide** spectroscopy of)

IT Adsorption
(of heme proteins obsd. using slab optical **waveguide** spectroscopy)

IT Adsorbed substances
(slab optical **waveguide** spectra of heme proteins)

IT Optical **waveguides**
(slab; adsorption behavior of heme proteins obsd. using spectroscopy of)

IT 9007-43-6, cytochrome c
RL: PRP (Properties)
(equine; adsorption behavior obsd. using slab optical **waveguide** spectroscopy of)

L26 ANSWER 2 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2002:90348 HCAPLUS
DOCUMENT NUMBER: 136:131205
TITLE: Apparatus and method for evanescent light fluoroassays
INVENTOR(S): Boren, Arthur D.; Anderson, Alan C.; Pawlak, Jan W.; Wade, Larry D.; Stultz, Timothy J.; Freudenthal, Patrick E.; Hines, James M. T.; Miller, Eric D.
PATENT ASSIGNEE(S): Thaumdx, LLC, USA
SOURCE: PCT Int. Appl., 44 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002008762	A1	20020131	WO 2001-US21634	20010710

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2000-620638 A 20000721

AB An app. and method for evanescent light fluoroassays incorporate a **waveguide** in a disposable cartridge for the detection and quantification of analytes. The **waveguide**, preferably a planar **waveguide**, contains on one surface an analyte-binding mol. for binding an analyte from a fluid sample, such as a blood sample. The analyte is linked directly (for a competitive immunoassay) or indirectly, through an analyte-binding mol., (for a sandwich immunoassay) to a fluorescent mol. Alternatively, an analyte or analyte analog is bound to a surface of the **waveguide**. Analyte present in a fluid sample would compete with the analyte or analyte analog on the **waveguide** surface for a labeled analyte-binding mol. The disposable cartridge (20) may contain a fluid sample in a tube, which is held on a platform comprising a light source (11), a means for holding the disposable cartridge (15), and a light detecting device (17). The system holds the disposable cartridge in place so that the **waveguide** (25) is properly aligned with the light source (11) and the light-detecting device (17). Air pressure, vacuum or capillary action may be used to move the fluid sample onto an assay area of the disposable cartridge, where the analyte reacts with the analyte-binding mol. on the **waveguide** surface. Upon passage of light through the **waveguide**, an evanescent field is created, which selectively excites fluorescent mols. bound to the **waveguide**. Light emitted by the fluorescent mol. is detected by the light-detecting device, and the amt. of analyte in the fluid sample is detd. Upon completion of the measurement, the entire cartridge can be discarded. The app. and method may be used in competitive or sandwich-type immunoassays, nucleic acid assays and enzymic hydrolysis assays.

IC ICM G01N033-543

CC 9-1 (Biochemical Methods)
Section cross-reference(s): 3, 7

ST app evanescent fluoroassay **waveguide** disposable cartridge; immunoassay app evanescent fluorescence; nucleic acid assay app evanescent fluorescence; enzyme hydrolysis assay app evanescent fluorescence

IT **Troponins**
RL: ANT (Analyte); DGN (Diagnostic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(I; app. and method for evanescent light fluoroassays)

IT **Myoglobins**
RL: ANT (Analyte); DGN (Diagnostic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and method for evanescent light fluoroassays)

IT Containers
(cartridges, disposable, contg. **waveguide**; app. and method for evanescent light fluoroassays)

IT Pipes and Tubes
(channels, **waveguide** sepd. into; app. and method for evanescent light fluoroassays)

IT **Waveguides**
(film; app. and method for evanescent light fluoroassays)

IT Refractive index
(of thin film **waveguide**; app. and method for evanescent light fluoroassays)

IT Optical **waveguides**
(with analyte-binding agent; app. and method for evanescent light fluoroassays)

IT 9001-15-4, **Creatine kinase**

RL: ANT (Analyte); DGN (Diagnostic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(MB; app. and method for evanescent light fluoroassays)

IT 9003-53-6, Polystyrene
RL: DEV (Device component use); USES (Uses)
(**waveguide** of; app. and method for evanescent light fluoroassays)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 3 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:851485 HCAPLUS
DOCUMENT NUMBER: 135:368902
TITLE: Grating optical **waveguide** structure for **multi-analyte** determinations and the use thereof
INVENTOR(S): Pawlak, Michael; Ehrat, Markus; Duveneck, Gert; Bopp, Martin
PATENT ASSIGNEE(S): Zeptosens A.-G., Switz.
SOURCE: PCT Int. Appl., 99 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001088511	A1	20011122	WO 2001-EP605	20010119

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: CH 2000-888 A 20000506
CH 2000-2095 A 20001026

AB Grating optical waveguide structures for the detn. of positionally resolved modifications of the resonance conditions for injecting an excitation light into the waveguiding layer of an optical waveguide via the grating structure modulated in the layer or for coupling light out of the waveguide are described which comprise arrays of measuring areas produced thereupon each having different immobilized biol. or biochem. or synthetic identification elements for simultaneously binding and detg. one or more analytes which can be simultaneously irradiated and the degree of satisfaction of the resonance condition for the injection of light into the layer simultaneously measured in the measuring areas. Optical systems comprising .gtoreq.1 excitation light source and .gtoreq.1 position-resolving detector and, optionally, positioning elements for altering the angle of incidence of the excitation light onto the inventive grating optical waveguide structure. Corresponding measuring methods and the uses are also described. Application to biochem anal. is described.

IC ICM G01N021-77
ICS G01N033-543

CC 9-1 (Biochemical Methods)
Section cross-reference(s): 17, 61, 73, 79, 80

ST integrated **waveguide** sample holder luminescence analysis

IT Blood analysis
Clinical analyzers
DNA sequence analysis
Diffraction gratings
Fluorometers
Food analysis
Luminescence
Optical sensors
Optical **waveguides**
Plant analysis
Urine analysis
(grating optical **waveguide** structures for **multi-analyte** detns. and their use)

IT Agglutinins and Lectins
Antibodies
Antigens
DNA
Enzymes, analysis
Nucleic acids
Nucleotides, analysis
RNA
RL: ANT (Analyte); ANST (Analytical study)
(grating optical **waveguide** structures for **multi-analyte** detns. and their use)

IT Albumins, uses
RL: DEV (Device component use); USES (Uses)
(grating optical **waveguide** structures for **multi-analyte** detns. and their use)

IT Glass, uses
RL: DEV (Device component use); USES (Uses)
(grating optical **waveguide** structures for **multi-analyte** detns. and their use)

IT Polycarbonates, uses
RL: DEV (Device component use); USES (Uses)
(grating optical **waveguide** structures for **multi-analyte** detns. and their use)

IT Polyimides, uses
RL: DEV (Device component use); USES (Uses)
(grating optical **waveguide** structures for **multi-analyte** detns. and their use)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(grating optical **waveguide** structures for **multi-analyte** detns. and their use)

IT **Immunoassay**
(luminescence; grating optical **waveguide** structures for **multi-analyte** detns. and their use)

IT 7732-18-5, Water, analysis
RL: AMX (Analytical matrix); ANST (Analytical study)
(grating optical **waveguide** structures for **multi-analyte** detns. and their use)

IT 71-00-1, Histidine, analysis
RL: ANT (Analyte); ANST (Analytical study)
(grating optical **waveguide** structures for **multi-analyte** detns. and their use)

IT 1313-96-8, Niobium oxide 1314-13-2, Zinc oxide, uses 1314-23-4, Zirconium dioxide, uses 1314-61-0, Tantalum oxide 9003-53-6 9011-14-7, PMMA 12055-23-1, Hafnium dioxide 13463-67-7, Titanium dioxide, uses 25322-68-3, Polyethylene glycol
RL: DEV (Device component use); USES (Uses)

(grating optical **waveguide** structures for **multi-analyte** detns. and their use)
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 4 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:677703 HCAPLUS
DOCUMENT NUMBER: 136:28104
TITLE: Commercialization of evanescent planar **waveguide** (EPW) technology
AUTHOR(S): Boren, Arthur D.; Pawlak, Jan; Stultz, Timothy J.
CORPORATE SOURCE: ThauMDx, Santa Barbara, CA, 93117, USA
SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (2001), 4255(Clinical Diagnostic Systems), 63-66
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review. Great new product ideas come from many sources including academia, industry and creative entrepreneurs. Combine a solid team of scientists, engineers and business people with diverse, relevant experience with committed investors and those ideas can become reality. The development of the LifeLiteTM System is a case study that began with an academic research program and will culminate in com. launch in IIQ01 following FDA approval. The LifeLiteTM System is a technol. platform with broad application in immunoassays, mol. diagnostics and genomics/proteomics. The 1st product application is the LifeLiteTM Cardiac Panel, a 5-min point-of-care test to measure troponin-I, myoglobin and CK-MB in whole blood using a single disposable reagent cartridge. Each cartridge also contains proprietary integral quality controls to check that the instrument and reagents are functioning properly on every test. No other system offers the superior performance, single cartridge/ **multi-analyte** testing capability and breadth of new product candidates. This paper describes some of the key tech. challenges and creative solns. applied by the ThauMDx product development team to apply EPWTM in a com. product as well as future applications of the platforms.
CC 73-0 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 9, 34, 80
ST review evanescent planar **optical waveguide** **sensor immunoassay troponin myoglobin**
IT **Troponins**
RL: **ANT (Analyte)**; **ANST (Analytical study)**
(I; commercialization of evanescent planar **waveguide** (EPW) technol.)
IT Evanescent wave
Immunoassay
Planar **waveguides** (optical)
(commercialization of evanescent planar **waveguide** (EPW) technol.)
IT **Myoglobins**
RL: **ANT (Analyte)**; **ANST (Analytical study)**
(commercialization of evanescent planar **waveguide** (EPW) technol.)

L26 ANSWER 5 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:574045 HCAPLUS
DOCUMENT NUMBER: 135:207688

TITLE: Analysis of the response of planar polarization interferometer to molecular layer formation: fibrinogen adsorption on silicon nitride surface
AUTHOR(S): Shirshov, Y. M.; Snopok, B. A.; Samoylov, A. V.; Kiyanovskij, A. P.; Venger, E. F.; Nabok, A. V.; Ray, A. K.
CORPORATE SOURCE: Department of Functional Optoelectronics, National Academy of Sciences, Institute of Semiconductor Physics, Kiev, 252028, Ukraine
SOURCE: Biosensors & Bioelectronics (2001), 16(6), 381-390
CODEN: BBIOE4; ISSN: 0956-5663
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The most sensitive optical method of interferometry was exploited for detn. of changes in the refractive index following the adsorption of biol. mols. onto the solid surface. Instead of having two waveguiding arms (the main and the ref.) in traditional Mach-Zhender interferometer, two orthogonal TM and TE modes propagating through the SiO2-Si3N4-SiO2 **waveguide** structure were employed in planar polarization interferometer (PPI). Multi-periodic PPI response was, therefore, formed due to the phase shift between TM and TE modes. A matrix simulation procedure was developed in order to investigate the influence of both the refractive index and mol. layer thickness on the PPI response. Nonspecific binding of fibrinogen to silicon nitride surface was studied as a model object for PPI testing. The results obtained are in good agreement with the known information about fibrinogen adsorption on the different surfaces. An attempt to introduce the concept of 'surface mol. concn. and mol. polarizability' instead of 'mol. layer thickness and refractivity' was undertaken.

CC 9-5 (Biochemical Methods)
IT Adsorption
Interferometry
Mach-Zehnder interferometers
Refractive index
Simulation and Modeling, physicochemical
Waveguides
(planar polarization interferometer to mol. layer formation of fibrinogen adsorption on silicon nitride surface)
IT Albumins, processes
Fibrinogens
Myoglobins
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(planar polarization interferometer to mol. layer formation of fibrinogen adsorption on silicon nitride surface)
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 6 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:137466 HCAPLUS
DOCUMENT NUMBER: 134:190327
TITLE: Device and method for determining **multiple analytes**
INVENTOR(S): Abel, Andreas P.; Dubeneck, Gert L.; Ehrat, Markus; Kresbach, Gerhard M.; Pawlak, Michael; Schurmann-Mader, Eveline
PATENT ASSIGNEE(S): Zeptosens A.-G., Switz.
SOURCE: PCT Int. Appl., 71 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent

LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001013096	A1	20010222	WO 2000-EP7529	20000803

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: CH 1999-1486 A 19990813

AB App. comprising a planar optical waveguide which forms part of a sensor platform and a layer, having a plurality of recesses which are open at least at the side of the sensor platform and which form a plurality of sample containers in a two-dimensional arrangement, which is in contact with the sensor platform directly or through an intermediate sealing medium and which is sealed directly or with the sealing medium is described in which different biochem. or biol. identifying elements for specifically identifying and bonding different analytes are immobilized in .gtoreq.5 discrete measuring areas in a single sample container resp. The measuring areas interact optically with an excitation light from the optical waveguide (e.g., to allow luminescence measurements). Sample or reagent liqs. that were supplied to the sample containers can be removed and other sample or reagent liqs. can then be supplied to the same sample containers, optionally without washing.

IC ICM G01N021-77
ICS G01N021-76; G01N021-64; G01N021-55; G01N033-543

CC 9-1 (Biochemical Methods)
Section cross-reference(s): 17, 61, 73, 79, 80

ST integrated **waveguide** sample holder luminescence analysis

IT Blood analysis
Clinical analyzers
DNA sequence analysis
Fluorometers
Food analysis
Luminescence
Optical sensors
Plant analysis
Urine analysis
(integrated **waveguide** sample holder systems for anal. and methods for luminescence anal. using them)

IT Agglutinins and Lectins
Antibodies
Antigens
DNA
Enzymes, analysis
Nucleic acids
Nucleotides, analysis
RNA
RL: ANT (Analyte); ANST (Analytical study)
(integrated **waveguide** sample holder systems for anal. and methods for luminescence anal. using them)

IT Polycarbonates, uses
RL: DEV (Device component use); USES (Uses)

(integrated **waveguide** sample holder systems for anal. and methods for luminescence anal. using them)

IT Polyimides, uses
RL: DEV (Device component use); USES (Uses)
(integrated **waveguide** sample holder systems for anal. and methods for luminescence anal. using them)

IT **Immunoassay**
(luminescence; integrated **waveguide** sample holder systems for anal. and methods for luminescence anal. using them)

IT 7732-18-5, Water, analysis
RL: ANT (Analyte); ANST (Analytical study)
(integrated **waveguide** sample holder systems for anal. and methods for luminescence anal. using them)

IT 1313-96-8, Niobium oxide 1314-13-2, Zinc oxide, uses 1314-23-4, Zirconium dioxide, uses 1314-61-0, Tantalum oxide 9003-53-6 9011-14-7, PMMA 12055-23-1, Hafnium dioxide 13463-67-7, Titanium dioxide, uses
RL: DEV (Device component use); USES (Uses)
(integrated **waveguide** sample holder systems for anal. and methods for luminescence anal. using them)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 7 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:535362 HCAPLUS
DOCUMENT NUMBER: 133:132092
TITLE: Method and apparatus for detecting molecular binding events
INVENTOR(S): Hefti, John
PATENT ASSIGNEE(S): Signature Bioscience Inc., USA
SOURCE: PCT Int. Appl., 124 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 7
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000045170	A2	20000803	WO 2000-US2573	20000201
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6395480	B1	20020528	US 1999-243196	19990201

PRIORITY APPLN. INFO.: US 1999-243196 A1 19990201

AB Systems and methods for detecting mol. binding events and other environmental effects using the unique dielec. properties of the bound mol. structure or structures are presented. A mol. binding layer is coupled along the surface of a signal path. A test signal is propagated along the signal path, whereby the test signal couples to the mol. binding layer, and in response exhibits a signal response. Troponin-I was detected in anticoagulated whole human blood using a bioassay device coated with antibody to troponin-I.

IC ICM G01N033-53

CC 9-1 (Biochemical Methods)
Section cross-reference(s): 15
ST app detection mol binding; biosensor detection **troponin** I blood immobilized antibody
IT **Troponins**
RL: ANT (Analyte); ANST (Analytical study)
(I, detection of, in whole blood; method and app. for detecting mol. binding events)
IT Antibodies
RL: ARG (Analytical reagent use); DEV (Device component use); PEP (Physical, engineering or chemical process); ANST (Analytical study); PROC (Process); USES (Uses)
(immobilized, to **troponin**-I; method and app. for detecting mol. binding events)
IT Analysis
Analytical apparatus
Biosensors
Blood analysis
Body fluid
Computer program
Dielectric properties
Molecular association
Resonance
Waveguides
pH
(method and app. for detecting mol. binding events)

L26 ANSWER 8 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:539029 HCAPLUS
DOCUMENT NUMBER: 131:283546
TITLE: **Multiple-Analyte Fluoroimmunoassay** Using an Integrated **Optical Waveguide Sensor**
AUTHOR(S): Plowman, T. E.; Durstchi, J. D.; Wang, H. K.; Christensen, D. A.; Herron, J. N.; Reichert, W. M.
CORPORATE SOURCE: Center for Emerging Cardiovascular Technologies Department of Biomedical Engineering, Duke University, Durham, NC, 27710, USA
SOURCE: Analytical Chemistry (1999), 71(19), 4344-4352
CODEN: ANCHAM; ISSN: 0003-2700
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A silicon oxynitride integrated optical **waveguide** was used to evanescently excite fluorescence from a **multianalyte** sensor surface in a rapid, sandwich immunoassay format. **Multiple analyte** immunoassay (MAIA) results for two sets of three different analytes, one employing polyclonal and the other monoclonal capture antibodies, were compared with results for identical analytes performed in a single-analyte immunoassay (SAIA) format. The MAIA protocol was applied in both phosphate-buffered saline and simulated serum solns. Point-to-point correlation values between the MAIA and SAIA results varied widely for the polyclonal antibodies (R2 = 0.42-0.98) and were acceptable for the monoclonal antibodies (R2 = 0.93-0.99). Differences in calcd. receptor affinities were also evident with polyclonal antibodies, but not so with monoclonal antibodies. Polyclonal antibody capture layers tended to demonstrate departure from ideal receptor-ligand binding while monoclonal antibodies generally displayed monovalent binding. A third set of three antibodies, specific for three cardiac proteins routinely used to categorize myocardial infarction, were also evaluated with the two assay

protocols. MAIA responses, over clin. significant ranges for creatine kinase MB, cardiac troponin I, and myoglobin agreed well with responses generated with SAIA protocols (R2 = 0.97-0.99).

CC 9-10 (Biochemical Methods)
Section cross-reference(s): 14

ST **multiple analyte fluoroimmunoassay**
integrated **optical waveguide sensor**

IT **Troponins**
RL: **ANT (Analyte)**; THU (Therapeutic use); **ANST (Analytical study)**; BIOL (Biological study); USES (Uses)
(I; **multiple-analyte fluoroimmunoassay** using integrated **optical waveguide sensor**)

IT **Immunoassay**
(fluorescence; **multiple-analyte fluoroimmunoassay** using integrated **optical waveguide sensor**)

IT **Optical waveguides**
(integrated; **multiple-analyte fluoroimmunoassay** using integrated **optical waveguide sensor**)

IT Antibodies
RL: ARG (Analytical reagent use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(monoclonal; **multiple-analyte fluoroimmunoassay** using integrated **optical waveguide sensor**)

IT **Optical sensors**
(**multiple-analyte fluoroimmunoassay** using integrated **optical waveguide sensor**)

IT **Myoglobins**
RL: **ANT (Analyte)**; THU (Therapeutic use); **ANST (Analytical study)**; BIOL (Biological study); USES (Uses)
(**multiple-analyte fluoroimmunoassay** using integrated **optical waveguide sensor**)

IT Antibodies
RL: ARG (Analytical reagent use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(**multiple-analyte fluoroimmunoassay** using integrated **optical waveguide sensor**)

IT Diagnosis
(serodiagnosis; **multiple-analyte fluoroimmunoassay** using integrated **optical waveguide sensor**)

IT 27072-45-3, FITC
RL: ARG (Analytical reagent use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(**multiple-analyte fluoroimmunoassay** using integrated **optical waveguide sensor**)

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 9 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:383626 HCAPLUS
DOCUMENT NUMBER: 129:172550
TITLE: Rapid clinical diagnostics assays using injection-molded planar **waveguides**
AUTHOR(S): Herron, James N.; Wang, Hsu-Kun; Terry, Alan H.; Durtschi, Jacob D.; Tan, Lyndon; Astill, Mark E.; Smith, Richard S.; Christensen, Douglas A.

CORPORATE SOURCE: Department of Pharmaceutics, University of Utah, Salt Lake City, UT, 84112, USA
SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (1998), 3259(Systems and Technologies for Clinical Diagnostics and Drug Discovery), 54-64
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The goal of our research program is to develop an evanescent wave immunoassay system that can be used in point-of-care and crit. care settings. Several key attributes are required to accomplish this goal: (i) the assay system should be at least as sensitive as present day immunoassays; (ii) assay time should be 5 min or less; (iii) the assay protocol should be relatively simple; (i.v.) the sensor should be capable of performing more than one assay on a single specimen; (v) the assay system should be able to accommodate specimens such as serum, plasma and whole blood; and (vi) the sensor should be an inexpensive, disposable cartridge. Our lab. has developed an injection-molded planar **waveguide** sensor that meets most, if not all, of these attributes. This sensor has been evaluated in a no. of different immunoassays for analytes such as bovine serum albumin, human chorionic gonadotrophin, creatine phosphokinase MB and cardiac troponin I.

CC 9-1 (Biochemical Methods)

ST clin diagnosis injection molded planar **waveguidey**

IT **Troponins**
RL: ANT (Analyte); ANST (Analytical study)
(I, Cardiac; rapid clin. diagnostics assays using injection-molded planar **waveguides**)

IT **Waveguides**
(Injection-molded planar; rapid clin. diagnostics assays using injection-molded planar **waveguides**)

IT Biosensors
(immunosensors, Evanescent wave; rapid clin. diagnostics assays using injection-molded planar **waveguides**)

IT Blood analysis
Diagnosis
Immunoassay
(rapid clin. diagnostics assays using injection-molded planar **waveguides**)

IT Albumins, analysis
RL: ANT (Analyte); ANST (Analytical study)
(serum; rapid clin. diagnostics assays using injection-molded planar **waveguides**)

IT 9001-15-4, Creatine phosphokinase
RL: ANT (Analyte); ANST (Analytical study)
(MB; rapid clin. diagnostics assays using injection-molded planar **waveguides**)

IT 9002-61-3, Chorionic gonadotrophin
RL: ANT (Analyte); ANST (Analytical study)
(rapid clin. diagnostics assays using injection-molded planar **waveguides**)

L26 ANSWER 10 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:370915 HCAPLUS
DOCUMENT NUMBER: 129:133156
TITLE: Reversible integrated optic evanescent field biosensor using chemical amplification for added sensitivity
AUTHOR(S): Campbell, Daniel P.; Hartman, Nile F.; Moore, Jeffrey

L.; Suggs, James V.; Cobb, Janet M.
CORPORATE SOURCE: Georgia Tech Research Institute, Atlanta, GA, 30332, USA
SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (1998), 3253(Biomedical Sensing and Imaging Technologies), 20-26
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Planar waveguide interferometers provide an attractive sensing platform for biosensor applications. Advantages include small size, real-time sensing, **multiple analyte** detection on a single chip, performance independent of wavelength and optical power, and nulling of thermal and mech. noise. Limitations include slow diffusion time of the analyte to the functionalized surface, interference from non-specific binding and bulk index of refraction changes and a lack of reversibility. Combining certain techniques used in affinity chromatog. and enzyme-linked immunosorbent assays and with an amplifying chemoselective film on the waveguide produces a sensor that is versatile, reusable and overcomes most of the above limitations. Work will be presented using an optical pH and ammonia sensor for detection.

CC 9-1 (Biochemical Methods)

ST biosensor integrated optics **waveguide** chem amplification; evanescent field biosensor chem amplification

IT **Immunoassay**
(enzyme-linked immunosorbent assay; reversible integrated optic evanescent field biosensor using chem. amplification for added sensitivity)

IT Affinity chromatography
Biosensors
Interferometers
Optical integrated circuits
Optical **waveguides**
pH
(reversible integrated optic evanescent field biosensor using chem. amplification for added sensitivity)

L26 ANSWER 11 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1997:735758 HCAPLUS
DOCUMENT NUMBER: 127:328687
TITLE: Apparatus and methods for **multi-analyte** homogeneous **fluoroimmunoassay**
INVENTOR(S): Herron, James N.; Christensen, Douglas A.; Wang, Hsu-kun; Caldwell, Karin D.; Janatova, Vera; Huang, Shao-chie
PATENT ASSIGNEE(S): University of Utah Research Foundation, USA
SOURCE: U.S., 33 pp. Cont.-in-part of U.S.5,516,703.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 5
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5677196	A	19971014	US 1994-263522	19940622
US 5512492	A	19960430	US 1993-64608	19930518
US 5516703	A	19960514	US 1993-110169	19930820
WO 9427137	A2	19941124	WO 1994-US5567	19940518

WO 9427137 A3 19950119
W: AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, GE, HU, JP, KP, KR, KZ, LK, LU, LV, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, UZ, VN
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG
US 5846842 A 19981208 US 1996-640141 19960430
US 5919712 A 19990706 US 1996-748687 19961113
US 6340598 B1 20020122 US 1998-207187 19981208
AU 9943416 A1 19991028 AU 1999-43416 19990805
US 6316274 B1 20011113 US 2000-516307 20000301
PRIORITY APPLN. INFO.: US 1993-64608 A2 19930518
US 1993-71579 B2 19930602
US 1993-110169 A2 19930820
WO 1994-US5567 W 19940518
AU 1994-73116 A3 19940518
US 1994-263522 A3 19940622
US 1996-640141 A3 19960430
US 1996-748687 A1 19961113
US 1997-979582 B3 19971126

AB Methods and app. for evanescent light fluoroimmunoassays are disclosed. The app. employs a planar waveguide with an integral semi-cylindrical lens, and has **multi-analyte** features and calibration features, along with improved evanescent field intensity. A preferred embodiment of the biosensor and assay method have patches of capture mols. each specific for a different analyte disposed adjacent within a single reservoir. The capture mols. are immobilized to the patches on the waveguide surface by site-specific coupling of thiol groups on the capture mols. to photo-affinity crosslinkers which in turn are coupled to the waveguide surface or to a non-specific-binding-resistant coating on the surface. The patches of different antibodies are produced by selectively irradiating a portion of the waveguide surface during the process of coupling the photo-affinity crosslinkers the selective irradn. involving a mask, a laser light source, or the like.

IC G01N033-543; G01N033-552
NCL 436518000
CC 9-10 (Biochemical Methods)
ST app **multi analyte** homogeneous **fluoroimmunoassay**

IT Fluorescence **immunoassay**
(Homogeneous; app. and methods for **multi-analyte** homogeneous **fluoroimmunoassay**)

IT **Waveguides**
(Planar; app. and methods for **multi-analyte** homogeneous **fluoroimmunoassay**)

IT Lenses
(Semi-cylindrical; app. and methods for **multi-analyte** homogeneous **fluoroimmunoassay**)

IT Apparatus
Biosensors
Immunoassay apparatus
Sulfhydryl group
(app. and methods for **multi-analyte** homogeneous **fluoroimmunoassay**)

IT Antibodies
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(app. and methods for **multi-analyte** homogeneous **fluoroimmunoassay**)

L26 ANSWER 12 OF 17 HCAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1997:640843 HCAPLUS
DOCUMENT NUMBER: 127:231583
TITLE: Oscillation apparatus and methods for **multi-analyte** homogeneous fluoro-**immunoassays**
INVENTOR(S): Herron, James N.; Christensen, Douglas A.; Miles, Scott D.
PATENT ASSIGNEE(S): University of Utah Research Foundation, USA; Herron, James N.; Christensen, Douglas A.; Miles, Scott D.
SOURCE: PCT Int. Appl., 47 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9735203	A1	19970925	WO 1997-US4378	19970319
W: AU, CA, JP, NO, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
CA 2248190	AA	19970925	CA 1997-2248190	19970319
AU 9725837	A1	19971010	AU 1997-25837	19970319
EP 888546	A1	19990107	EP 1997-917546	19970319
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
JP 2000506981	T2	20000606	JP 1997-533651	19970319
NO 9804356	A	19981118	NO 1998-4356	19980918
US 6242267	B1	20010605	US 1998-142946	19980918

PRIORITY APPLN. INFO.: US 1996-14713P P 19960319
WO 1997-US4378 W 19970319

AB An app. and method for rapidly analyzing samples for analytes of interest by an homogeneous immunofluorescence assay. The app. includes a sample test cartridge having a high control sample section, a low control sample section, and at least one test sample section. Each of these sections contain at least one pre-loaded reagent housed in a well within the cartridge wherein the low control sample section contains a known low amt. of an analyte of interest and the high control sample section contains a known high amt. of an analyte of interest. The cartridge includes a biosensor comprising a planar waveguide having first and second parallel plane surfaces and an edge extending between them, the edge having a receiving region for receiving a light beam. Each of the high control sample section, the low control sample section, and the test sample control sections have a well which includes a waveguide surface, wherein the contents of each section contacts capture mols. immobilized on the waveguide surface. The capture mols. are configured to specifically bind a chosen analyte and fluoresce when interacting with light passing through the waveguide surface. The concn. of said analyte of interest in said sample fluid is detd. by a comparison of intensities of fluorescence of between said capture mol. areas of said sample capture mol. well, said low control capture mol. well, and said high control capture mol. well.

IC ICM G01N033-552
CC 9-1 (Biochemical Methods)
ST oscillation app homogeneous **fluoroimmunoassay**
IT **Immunoassay** apparatus
(**Multi-analyte** homogeneous fluoro-; oscillation app. and methods for **multi-analyte** homogeneous fluoro-**immunoassays**)
IT Fluorescence **immunoassay**
(**Multi-analyte** homogeneous; oscillation app. and methods for **multi-analyte** homogeneous fluoro-

immunoassays)
IT Apparatus
(Oscillation; oscillation app. and methods for **multi-analyte** homogeneous fluoro-**immunoassays**)
IT Receptors
RL: ARG (Analytical reagent use); ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(membrane; oscillation app. and methods for **multi-analyte** homogeneous fluoro-**immunoassays**)
IT Peptides, analysis
RL: ARG (Analytical reagent use); ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(oligo-; oscillation app. and methods for **multi-analyte** homogeneous fluoro-**immunoassays**)
IT Biosensors
Cartridges (ammunition)
(oscillation app. and methods for **multi-analyte** homogeneous fluoro-**immunoassays**)
IT Antibodies
Antigens
Nucleic acids
Oligonucleotides
Peptides, analysis
RL: ARG (Analytical reagent use); ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(oscillation app. and methods for **multi-analyte** homogeneous fluoro-**immunoassays**)
IT **Waveguides**
(planar; oscillation app. and methods for **multi-analyte** homogeneous fluoro-**immunoassays**)

L26 ANSWER 13 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1997:485819 HCAPLUS
TITLE: Molecular orientation and distribution in **myoglobin** films immobilized on a variety of modified surfaces
AUTHOR(S): Gabbard, Elizabeth A.; Edmiston, Paul L.; Lee, John E.; Wood, Laurie L.; Saavedra, S. S.
CORPORATE SOURCE: Department Chemistry, University Arizona, Tucson, AZ, 85721, USA
SOURCE: Book of Abstracts, 214th ACS National Meeting, Las Vegas, NV, September 7-11 (1997), ANYL-074. American Chemical Society: Washington, D. C.
CODEN: 64RNAO
DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English
AB The structure and function of proteins at surfaces are important in the development and study of biosensors and biocompatible materials. It is hypothesized that a site-directed interaction between a protein and a surface will promote an ordered film. We are currently studying this hypothesis by examg. mol. orientation distributions in heme proteins immobilized to surfaces derivatized with SAMs and LB films. The angular distribution of the heme ensemble is measured using a combination of integrated optical **waveguide** - attenuated total reflection (IOW-ATR) and total internal reflectance fluorescence (TIRF) spectrosocopies. The degree of macroscopic order measured in several types of myoglobin monolayers, and the interactions involved in the formation of these monolayers will be discussed.

L26 ANSWER 14 OF 17 HCAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1996:444261 HCAPLUS
DOCUMENT NUMBER: 125:108252
TITLE: Molecular Orientation in Heme Protein Films Adsorbed to Hydrophilic and Hydrophobic Glass Surfaces
AUTHOR(S): Lee, John E.; Saavedra, S. Scott
CORPORATE SOURCE: Department of Chemistry, University of Arizona, Tucson, AZ, 85721, USA
SOURCE: Langmuir (1996), 12(16), 4025-4032
CODEN: LANGD5; ISSN: 0743-7463
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Due to the heterogeneous distribution of chem. functionalities present on the surface of most proteins, adsorption to solid materials of differing surface chem. may produce different bound mol. orientations. Differences in mol. orientation may in turn produce differences in adsorbed biofunction, which has important implications for fabrication of protein-based mol. devices. Aspects of this topic were addressed here by investigating mol. orientation in submonolayer to monolayer thick films of myoglobin (Mb) and cytochrome c (cyt c) adsorbed to hydrophilic and hydrophobic glass substrates. Orientation was detd. by measuring the mean tilt angle of the heme moiety in protein films supported on a planar integrated optical **waveguide**. The results show (i) mean mol. orientation in monolayer films of both Mb and cyt c on both substrates is anisotropic rather than random (ii) mol. orientation in monolayer cyt c films is dependent on the wettability of the substrate and (iii) on both substrates, mol. orientation in submonolayer Mb films is substantially different than that in monolayer films.

CC 6-3 (General Biochemistry)
ST cytochrome **myoglobin** orientation hydrophilic hydrophobic glass; heme protein orientation hydrophilic hydrophobic glass
IT **Myoglobins**
RL: PRP (Properties)
(mol. orientation in heme protein films adsorbed to hydrophilic and hydrophobic glass surfaces)
IT **Myoglobins**
RL: PRP (Properties)
(zincato-, mol. orientation in heme protein films adsorbed to hydrophilic and hydrophobic glass surfaces)

L26 ANSWER 15 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1995:328615 HCAPLUS
DOCUMENT NUMBER: 122:101103
TITLE: Apparatus and methods for **multianalyte** homogeneous **fluoroimmunoassays**
INVENTOR(S): Herron, James N.; Christensen, Douglas A.; Wang, Hsu-Kun; Caldwell, Karin D.; Janatova, Vera; Huang, Shao-Chie
PATENT ASSIGNEE(S): University of Utah Research Foundation, USA
SOURCE: PCT Int. Appl., 59 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 5
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9427137	A2	19941124	WO 1994-US5567	19940518
WO 9427137	A3	19950119		

W: AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, GE,

HU, JP, KP, KR, KZ, LK, LU, LV, MG, MN, MW, NL, NO, NZ, PL, PT,
RO, RU, SD, SE, SK, UA, UZ, VN
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE,
BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG

US 5512492	A	19960430	US 1993-64608	19930518	
CA 2162996	AA	19941124	CA 1994-2162996	19940518	
AU 9473116	A1	19941212	AU 1994-73116	19940518	
AU 704947	B2	19990506			
EP 700514	A1	19960313	EP 1994-923161	19940518	
EP 700514	B1	20011128			
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE					
JP 08510331	T2	19961029	JP 1994-525810	19940518	
AT 209782	E	20011215	AT 1994-923161	19940518	
US 5677196	A	19971014	US 1994-263522	19940622	
US 5846842	A	19981208	US 1996-640141	19960430	
US 6340598	B1	20020122	US 1998-207187	19981208	
AU 9943416	A1	19991028	AU 1999-43416	19990805	

PRIORITY APPLN. INFO.:

US 1993-64608	A	19930518
US 1993-71579	A	19930602
US 1993-110169	A2	19930820
AU 1994-73116	A3	19940518
WO 1994-US5567	W	19940518
US 1996-640141	A3	19960430

AB Methods and app. for evanescent light fluoroimmunoassays are disclosed. The app. employs a planar waveguide with an integral semi-cylindrical lens and has **multianalyte** features and calibration features, along with improved evanescent field intensity. A preferred embodiment of the biosensor and assay method have patches of capture mols. each specific for a different analyte disposed adjacent within a single reservoir. The capture mols. are immobilized to the patches on the waveguide surface by site-specific coupling of thiol groups on the capture mols. to photoaffinity crosslinkers, which in turn are coupled to the waveguide surface or to a nonspecific-binding-resistant coating on the surface. The patches of different antibodies are produced by selectively irradiating a portion of the waveguide surface during the process of coupling the photoaffinity crosslinkers, the selective irradn. involving a mask, a laser light source, or the like.

IC ICM G01N021-64
ICS G01N033-58; G01N033-533; G01N033-547

CC 9-1 (Biochemical Methods)
Section cross-reference(s): 15

ST homogeneous fluorescence **immunoassay multianalyte waveguide** app; biosensor **fluoroimmunoassay** app

IT **Waveguides**
(app. and methods for **multianalyte** homogeneous **fluoroimmunoassays**)

IT Antibodies
Antigens
Haptens
RL: ARG (Analytical reagent use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and methods for **multianalyte** homogeneous **fluoroimmunoassays**)

IT Aryl azides
Avidins
RL: ARU (Analytical role, unclassified); DEV (Device component use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and methods for **multianalyte** homogeneous **fluoroimmunoassays**)

IT Aryl azides
RL: ARU (Analytical role, unclassified); DEV (Device component use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(fluoro; app. and methods for **multianalyte** homogeneous **fluoroimmunoassays**)
IT Crosslinking agents
(photoaffinity; app. and methods for **multianalyte** homogeneous **fluoroimmunoassays**)
IT **Immunoassay**
(fluorescence, app. and methods for **multianalyte** homogeneous **fluoroimmunoassays**)
IT Gels
RL: ARU (Analytical role, unclassified); DEV (Device component use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(hydro-, app. and methods for **multianalyte** homogeneous **fluoroimmunoassays**)
IT Peptides, biological studies
RL: ARG (Analytical reagent use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(oligo-, app. and methods for **multianalyte** homogeneous **fluoroimmunoassays**)
IT 920-46-7, Methacryloyl chloride 64987-85-5
RL: ARU (Analytical role, unclassified); DEV (Device component use); RCT (Reactant); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and methods for **multianalyte** homogeneous **fluoroimmunoassays**)
IT 26937-45-1P, Polymethacryloyl chloride
RL: ARU (Analytical role, unclassified); DEV (Device component use); SPN (Synthetic preparation); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); USES (Uses)
(app. and methods for **multianalyte** homogeneous **fluoroimmunoassays**)
IT 58-85-5, Biotin 119-61-9, Benzophenone, analysis 9003-53-6, Polystyrene 28166-06-5 28429-70-1 53053-08-0 60676-86-0, Fused silica 65994-07-2 76809-63-7 92944-71-3 126695-58-7
RL: ARU (Analytical role, unclassified); DEV (Device component use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and methods for **multianalyte** homogeneous **fluoroimmunoassays**)
IT 25322-68-3 25322-69-4, Polypropylene oxide
RL: ARU (Analytical role, unclassified); DEV (Device component use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(block copolymers; app. and methods for **multianalyte** homogeneous **fluoroimmunoassays**)

L26 ANSWER 16 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1994:675655 HCAPLUS
DOCUMENT NUMBER: 121:275655
TITLE: Large area **waveguide** sensor for **multiple analytes** detection
AUTHOR(S): Ho, Z. Z.; Low, Peter; Robinson, Dan
CORPORATE SOURCE: Applied Technology Division, Physical Optics Corporation, Torrance, CA, 90505, USA
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (1994), 2136(BIOCHEMICAL DIAGNOSTIC INSTRUMENTATION), 344-51

CODEN: PSISDG; ISSN: 0277-786X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A highly sensitive fluoroimmunoassay optical waveguide for the monitoring of biol. agents was developed. The scope and versatility of this method was enhanced by combining the principle of fluoroimmunoassay with latex-based waveguide evanescent wave sensing technol. A novel waveguide probe was successfully demonstrated as an antibody-based biosensor. Based on a designed biol. model, human IgG (h-IgG) were sensitively (0.3 ng/mL, 2 .times. 10-12 M) and rapidly (2 min assay time) identified and quantified using a diode laser (635 nm). The latex-based thin film has excellent optical quality and an established immunochem., making it stable and reliable for sensing applications. Because polymer-matrix waveguide is inexpensive and disposable, the probe cartridge is suitable for one time assay. Very fast and highly sensitive biosensors are potentially useful for many medical and clin. diagnostics, esp. for intensive or emergency care patients.
CC 9-1 (Biochemical Methods)
Section cross-reference(s): 15
ST area **waveguide** sensor **multiple analyte**
IT Sensors
(area **waveguide**; large area **waveguide** sensor for **multiple analytes** detection)
IT **Waveguides**
(**fluoroimmunoassay** optical; large area **waveguide** sensor for **multiple analytes** detection)
IT Immunoglobulins
RL: ANT (Analyte); ANST (Analytical study)
(G, large area **waveguide** sensor for **multiple analytes** detection)
IT **Immunoassay**
(fluorescence, large area **waveguide** sensor for **multiple analytes** detection)

L26 ANSWER 17 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1993:466847 HCAPLUS
DOCUMENT NUMBER: 119:66847
TITLE: Evanescent fluorescence **immunoassays** performed with a disposable ion-exchanged patterned **waveguide**
AUTHOR(S): Zhou, Y.; Magill, J. V.; De La Rue, R. M.; Laybourn, P. J. R.
CORPORATE SOURCE: Dep. Electron. Electr. Eng., Univ. Glasgow, Glasgow, G12 8QQ, UK
SOURCE: Sens. Actuators, B (1993), B11(1-3), 245-50
CODEN: SABCEB; ISSN: 0925-4005
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Reported is the successful performance of wash-free evanescent fluorescence immunoassays conducted with a disposable optical immunosensor. The sensing element is an ion-exchanged patterned waveguide fabricated in an ordinary glass microscope slide. The evanescent excitation of fluorescence is achieved through the evanescent wave penetrating into the etched wells of the patterned waveguide when an Ar+ laser beam is guided in the waveguide. The specific binding of an FITC (fluorescein isothiocyanate)-labeled antibody to its appropriate antigen immobilized in one of the etched wells of the patterned waveguide is monitored through the stronger fluorescence from that well compared with that from other antigen-immobilized wells. By using one of the wells as a control for non-specific binding and another as an internal ref. to

monitor the intensity of the excitation light beam, the response curves of **multi-analyte** and differential immunoassays have been obtained. These immunoassay results demonstrate the concept of a disposable one-step immunosensor.

CC 9-1 (Biochemical Methods)
Section cross-reference(s): 15

ST evanescent fluorescence **immunoassay** optical immunosensor; ion exchange patterned **waveguide** immunosensor

IT **Immunoassay**
(evanescent fluorescence, disposable optical immunosensor for)

IT **Waveguides**
(ion-exchanged patterned disposable, for evanescent fluorescence **immunoassays**)

IT Biosensors
(immunol., optical, disposable, for evanescent fluorescence **immunoassays**)

```
=> fil wpids
FILE 'WPIDS' ENTERED AT 13:25:07 ON 03 JUN 2002
COPYRIGHT (C) 2002 THOMSON DERWENT

FILE LAST UPDATED: 28 MAY 2002              <20020528/UP>
MOST RECENT DERWENT UPDATE            200234   <200234/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> The BATCH option for structure searches has been
    enabled in WPINDEX/WPIDS and WPIX  >>>

>>> PATENT IMAGES AVAILABLE FOR PRINT AND DISPLAY >>>

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES,
    SEE http://www.derwent.com/dwpi/updates/dwpicov/index.html <<<

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX TOOLS OF THE
    TRADE USER GUIDE, PLEASE VISIT:
    http://www.derwent.com/data/stn3.pdf <<<

>>> FOR INFORMATION ON ALL DERWENT WORLD PATENTS INDEX USER
    GUIDES, PLEASE VISIT:
    http://www.derwent.com/userguides/dwpi_guide.html <<<

=> d his


     (FILE 'WPIDS' ENTERED AT 13:13:58 ON 03 JUN 2002)
               DEL HIS Y
L1         35802 S WAVE GUIDE# OR WAVEGUIDE#
L2         31868 S IMMUNOASSAY# OR ?ASSAY?
L3            41 S FLUOROIMMUNOASSAY? OR FLUOROASSAY?
L4          3667 S L2 (L) FLUOR?
L5          3667 S L3 OR L4
L6         21720 S CARDIAC OR MYOCARDIA? OR TROPONIN# OR MYOGLOBIN# OR CREATINE
L7            43 S L5 AND L1
L8            15 S L6 AND L1
L9           471 S MULTIANALY? OR MULTI? (2A) ANALYT?
L10            6 S L9 AND L1
L11            0 S L10 AND L6
L12        16249 S ANALYT?
L13         2830 S L12 (S) (MULTI? OR MANY OR NUMBER? OR SIMULTAN? OR PLURAL?)
L14           39 S L13 AND L1
L15            9 S L14 AND (L6 OR L5)
L16           27 S L8 OR L10 OR L15

     FILE 'WPIDS' ENTERED AT 13:25:07 ON 03 JUN 2002

=> d que l16
L1         35802 SEA FILE=WPIDS ABB=ON  PLU=ON  WAVE GUIDE# OR WAVEGUIDE#
L2         31868 SEA FILE=WPIDS ABB=ON  PLU=ON  IMMUNOASSAY# OR ?ASSAY?
L3            41 SEA FILE=WPIDS ABB=ON  PLU=ON  FLUOROIMMUNOASSAY? OR FLUOROASSA
                 Y?
L4          3667 SEA FILE=WPIDS ABB=ON  PLU=ON  L2 (L) FLUOR?
L5          3667 SEA FILE=WPIDS ABB=ON  PLU=ON  L3 OR L4
L6         21720 SEA FILE=WPIDS ABB=ON  PLU=ON  CARDIAC OR MYOCARDIA? OR
                 TROPONIN# OR MYOGLOBIN# OR CREATINE KINASE#
L8            15 SEA FILE=WPIDS ABB=ON  PLU=ON  L6 AND L1
L9           471 SEA FILE=WPIDS ABB=ON  PLU=ON  MULTIANALY? OR MULTI? (2A)
```

```
                ANALYT?
L10           6 SEA FILE=WPIDS ABB=ON  PLU=ON  L9 AND L1
L12       16249 SEA FILE=WPIDS ABB=ON  PLU=ON  ANALYT?
L13        2830 SEA FILE=WPIDS ABB=ON  PLU=ON  L12 (S) (MULTI? OR MANY OR
                NUMBER? OR SIMULTAN? OR PLURAL?)
L14          39 SEA FILE=WPIDS ABB=ON  PLU=ON  L13 AND L1
L15           9 SEA FILE=WPIDS ABB=ON  PLU=ON  L14 AND (L6 OR L5)
L16          27 SEA FILE=WPIDS ABB=ON  PLU=ON  L8 OR L10 OR L15


=> d .wp 1-27

L16  ANSWER 1 OF 27  WPIDS (C) 2002 THOMSON DERWENT
AN   2002-216209 [27]    WPIDS
CR   1998-159598 [14]; 2000-117191 [09]
DNN  N2002-165684        DNC C2002-066078
TI   Device and method for determining multiple analytes.
DC   B04 D16 J04 S03
IN   ABEL, A P; DUBENECK, G L; EHRAT, M; KRESBACH, G M; PAWLAK, M;
     SCHUERMANN-MADER, E
PA   (ZEPT-N) ZEPTOSENS AG
CYC  91
PI   WO 2001013096 A1 20010222 (200227)* DE   40p
        RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
            NL OA PT SD SE SL SZ TZ UG ZW
         W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES
            FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS
            LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL
            TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
     AU 2000068347 A  20010313 (200227)
ADT  WO 2001013096 A1 WO 2000-EP7529 20000803; AU 2000068347 A AU 2000-68347
     20000803
FDT  AU 2000068347 A Based on WO 200113096
PRAI CH 1999-1486     19990813
AB   WO 200113096 A UPAB: 20020429
     NOVELTY - A novel device and method for determining multiple
     analytes.
          DETAILED DESCRIPTION - A novel device comprising a planar optical
     wave-guide which forms part of a sensor platform and a
     layer (g) which is in contact with the sensor platform directly or through
     an intermediate sealing medium and which is sealed directly or with the
     sealing medium. The layer has a number of recesses which are open at least
     at the side of the sensor platform and which form a number of sample
     containers in a two-dimensional arrangement. The invention is
     characterized in that different biochemical or biological identifying
     elements for specifically identifying and bonding different analytes are
     immobilized in five or more discrete measuring areas (d) in a single
     sample container respectively. The measuring areas interact optically with
     the excitation light from the optical wave-guide,
     which forms parts of a sensor platform. The sensor platform forms a
     delimiting surface of the sample containers. Sample or reagent liquids
     that have been supplied to the sample containers can be removed therefrom
     and other sample or reagent liquids can then be supplied to the same
     sample containers, optionally without washing.
          USE - The device and method are useful for determining
     multiple analytes.
     Dwg.1/20

L16  ANSWER 2 OF 27  WPIDS (C) 2002 THOMSON DERWENT
AN   2002-206093 [26]    WPIDS
```

DNN N2002-156945 DNC C2002-063179
TI In vitro clinical diagnostic instrument has disposable cartridge which includes planar **waveguide** having analyte binding molecule.
DC B04 J04 S03
IN ANDERSON, A C; BOREN, A D; FREUDENTHAL, P E; HINES, J M T; MILLER, E D; PAWLAK, J W; STULTZ, T J; WADE, L D
PA (THAU-N) THAUMDX LLC
CYC 96
PI WO 2002008762 A1 20020131 (200226)* EN 44p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
ADT WO 2002008762 A1 WO 2001-US21634 20010710
PRAI US 2000-620638 20000721
AB WO 200208762 A UPAB: 20020424
NOVELTY - Disposable cartridge (20) has a planar **waveguide** having an analyte-binding molecule for binding analytes bound to **fluorescent** molecule. A tray (15) aligns the **waveguide** with laser light of specific wavelength, creating an evanescent field by total internal reflection, for exciting the **fluorescent** molecule. A CCD camera (17) detects the light emitted in a perpendicular direction from **waveguide**.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(a) Disposable cartridge; and

(b) Fluid sample analyte detecting and quantitating method

USE - Used in various point-of-care environments such as patient's bed side, emergency rooms, outpatient lab settings, physician's offices, specialized hospital care units such as intensive care unit and coronary care unit, for testing blood, serum, plasma or other unprocessed fluids and solutions for measuring broad range of **analytes** such as small molecules, blood-borne hormones, including human chorionic gonadotropin (hCG), drugs e.g. digoxin, theophylline, phenytoin, carbamazepine and phenobarbital, other proteins, infectious organisms including C. difficile (A+B), human immuno deficiency virus (HIV), cytomegalovirus (CMV), HSV, mycoplasma, H. pylori, rotavirus, respiratory viruses such as influenza A, influenza B and respiratory syncitial virus (RSV), chlamydia and gonococcus, and for various parameters in blood such as blood gases, blood pH and electrolytes, for conducting **multiple assays** on a single patient sample and for variety of **assay** formats such as sandwich type immuno **assays**, competitive immuno **assays**, nucleic acid **assays** and enzymatic hydrolysis **assays**, direct DNA probe hybridization **assays**, bDNA quantification, sandwich DNA probe hybridization **assays**, **fluorescent** dye energy transfer reactions.

ADVANTAGE - Produces multiple measurement data quickly and accurately.

DESCRIPTION OF DRAWING(S) - The figure shows the schematic representation of clinical diagnostic platform.

Tray 15
CCD camera 17
Disposable cartridge 20
Dwg.1/9

L16 ANSWER 3 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 2002-083016 [11] WPIDS
DNN N2002-061860 DNC C2002-025162

TI Grating **waveguide** structure for spatially-resolved, **multi-analyte** determination, comprises measuring optically-stimulated local resonances, avoiding optical cross-coupling.
DC A96 B04 C07 D16 S03
IN BOPP, M; DUVENECK, G; EHRAT, M; PAWLAK, M
PA (ZEPT-N) ZEPTOSENS AG
CYC 91
PI WO 2001088511 A1 20011122 (200211)* DE 101p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2001026796 A 20011126 (200222)
ADT WO 2001088511 A1 WO 2001-EP605 20010119; AU 2001026796 A AU 2001-26796 20010119
FDT AU 2001026796 A Based on WO 200188511
PRAI CH 2000-2095 20001026; CH 2000-888 20000506
AB WO 200188511 A UPAB: 20020313
NOVELTY - A grating optical **waveguide** structure allows:
(a) excitation light is to be irradiated simultaneously over the array of measurement locations;
(b) the degree of resonant coupling of light into a layer, to be measured simultaneously at two or more measurement regions; and
(c) cross-coupling between adjacent measurement regions to be restricted, by coupling the excitation light back out again.
DETAILED DESCRIPTION - An INDEPENDENT CLAIMS are also included for the following:
(1) qualitative and/or qualitative detection of analyte(s) in sample(s) on spatially-separated measurement region(s); and
(2) a corresponding optical system.
USE - The structure is used to examine samples of e.g. blood, serum, plasma, lymph, urine, and protein, to examine turbid liquids, surface waters, ground- or plant extracts, bio- or synthetic processing vapors, or biological tissues (claimed). The method is used for analysis, in screening, pharmaceutical research, combinatorial chemistry, clinical development, real-time bonding studies, and to determine kinetic parameters in affinity screening and research, for qualitative and quantitative analyzes, especially for DNA and RNA analysis, for toxicity studies and determination of expression profiles. The method detects antibodies, antigens, pathogens or bacteria; is used in human and veterinary diagnosis, agrochemical product development and research, symptomatic and pre-symptomatic plant diagnosis, for patent stratification in pharmaceutical product development and for therapeutic medicament selection, for detection of pathogens, harmful substances and irritants, especially salmonella, prions and bacteria in food and the environment.
ADVANTAGE - The entire grid is illuminated for analysis. The method of coupling irradiated light out, prevents cross-coupling between the sample regions. Surprisingly high resolution, 50 micro m or less, and excellent contrast are achieved. The irradiation beam diameter is e.g. 5 mm. An imaging method can be used for simultaneous topological characterization of the layer over an extended area. Illumination interval and imaging rate can be adjusted to follow transient phenomena.
Dwg.0/3

L16 ANSWER 4 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 2001-483277 [52] WPIDS
CR 2001-581655 [50]
DNN N2001-357690 DNC C2001-144968

TI **Waveguide** plate, useful in sensors for determining **many** biological **analytes**, has, on the **waveguide** surface, a large coupling grating with very precise coupling angle.
DC B04 D16 J04 S03
IN DUVENECK, G; EDLINGER, J; HEINE, C; MAISENHOELDER, B; PAWLAK, M
PA (ZEPT-N) ZEPTOSENS AG
CYC 91
PI WO 2001055691 A2 20010802 (200152)* DE 39p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2001037339 A 20010807 (200174)
ADT WO 2001055691 A2 WO 2001-EP782 20010125; AU 2001037339 A AU 2001-37339 20010125
FDT AU 2001037339 A Based on WO 200155691
PRAI CH 2000-160 20000127
AB WO 200155691 A UPAB: 20011217
NOVELTY - **Waveguide** plate (A) comprises a glass substrate (1) coated with a **waveguide** layer (2) and, on the surface carrying (2), at least one coupling grating, formed as a line grating with periodicity 150-1000 nm and extending, in parallel lines, at least 5 cm.
DETAILED DESCRIPTION - **Waveguide** plate (A) comprises a glass substrate (1) coated with a **waveguide** layer (2) and, on the surface carrying (2), at least one coupling grating, formed as a line grating with periodicity 150-1000 nm and extending, in parallel lines, at least 5 cm. The coupling angle (theta) changes by at most 0.1 deg. /cm, along the line, and the absolute value of the deviation of theta from its rated value on the plate is not over 0.5 deg. .
INDEPENDENT CLAIMS are also included for the following:
(a) sensor platform (B) that includes (A);
(b) arrangement (C) of sample containers, including (A) or (B) as base plate; and
(c) method for **simultaneous** qualitative or quantitative determination of **many analytes** using (A), (B) or (C).
USE - (A) are used as components of sensors for performing, simultaneously or sequentially, multiple quantitative or qualitative biological assays, e.g. for antigens, antibodies, nucleic acids, enzymes etc. in biological samples, water etc. Typical of many applications are in drug screening; combinatorial chemistry; binding studies; toxicity determinations; determination of gene/protein expression profiles; human and veterinary diagnosis; detection of pathogens and pollutants etc.
ADVANTAGE - The use of large, very precise gratings allows rapid analysis with reduced effort, especially no system adjustments have to be made between sequential measurements.
Dwg.0/3

L16 ANSWER 5 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 2001-408460 [43] WPIDS
DNN N2001-302261 DNC C2001-123681
TI Flow cell array for **multi-analyte** determination, e.g. for drug research or food analysis, has base plate and attached bodies with channels between, forming flow cells with an inlet and an outlet leading to a liquid reservoir.
DC A89 B04 C07 D13 D16 J04 S03
IN ABEL, A P; BOPP, M A; DUVENECK, G L; EHRAT, M; KRESBACH, G M; PAWLAK, M; SCHAERER-HERNANDEZ, N G; SCHICK, E; SCHUERMANN-MADER, E
PA (ZEPT-N) ZEPTOSENS AG

CYC 91
PI WO 2001043875 A1 20010621 (200143)* DE 75p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2001020094 A 20010625 (200162)
ADT WO 2001043875 A1 WO 2000-EP12668 20001213; AU 2001020094 A AU 2001-20094 20001213
FDT AU 2001020094 A Based on WO 200143875
PRAI CH 2000-534 20000321; CH 1999-2316 19991217
AB WO 200143875 A UPAB: 20010801
NOVELTY - An arrangement of sample containers comprising a base plate (A) and an attached body (B) with channels between (A) and (B) arranged so as to form liquid-tight flow cell(s) with inlet(s) and outlet(s), in which at least one outlet from each flow cell leads to a reservoir which receives the liquid from the cell.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(a) an analytical system for the determination of analyte(s), with an array as described above, arrangements for feeding samples or reagents to the sample containers in a locally-addressed fashion and detector(s) for detecting changes in measured parameters, preferably optical, electrical, electrochemical or thermal quantities or a radioactive signal;

(b) an analytical system for the determination of luminescence(s), with an array and feed system as above, light source(s) for excitation and detector(s) for the light emitted from one or more areas on the sensor platform;

(c) a system for the determination of analyte(s), with an array and feed system as above, light source(s) for excitation and detector(s) for measuring a change in optical parameters, preferably refractive index (RI) and/or luminescence in the vicinity of the analyte(s);

(d) production of a 1- or 2-dimensional array as above by assembling the base plate and attached bodies in such a way as to form a fluid-tight seal between adjacent grooves; and

(e) detection of analytes in liquid samples with these arrangements and systems, in which samples and optionally other reagent liquids are fed into the sample containers and then flow out into a reservoir connected to the flow cell and forming a component of the sample container.

USE - For the determination of chemical, biochemical or biological analytes in screening processes for pharmaceutical research, combinatorial chemistry, clinical and preclinical development, real-time binding studies, kinetic parameters in affinity screening and research, DNA and RNA analysis and the determination of genomic and proteomic differences in the genome, e.g. single nucleotide polymorphism, measurement of protein-DNA interactions, determination of control mechanisms for m-RNA expression and protein (bio)synthesis, toxicity studies, determination of expression studies, especially for the determination of biological and chemical markers, e.g. mRNA, proteins, peptides or low-mol. wt. organic (messenger) substances, for the detection of antibodies, antigens, pathogens or bacteria in drug R and D, human and veterinary diagnostics, agrochemicals R and D, symptomatic and presymptomatic plant diagnostics and patient stratification in pharmaceutical product development, for therapeutic medicament selection and for the detection of pathogens, pollutants and irritants, especially salmonella, prions, viruses and bacteria, particularly in foods and the environment (claimed).

ADVANTAGE - An **analytical** system with a simple array of flow cells, enabling rapid and accurate **multi-analyte** determination with very small liquid samples of a very wide range of

analyte types without evaporation and loss of accuracy.
DESCRIPTION OF DRAWING(S) - Cross-section of flow cell arrangement.
sample inlet; 1
sample outlet; 2
recess (channel); 3
base plate; 4
reservoir; 5
body part 6
Dwg.1/5

L16 ANSWER 6 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 2001-147124 [15] WPIDS
DNN N2001-107759 DNC C2001-043472
TI Device for delivering radiation to a target site, e.g. the heart comprises optical apparatus proximate to the target site, forming annular light beam energy.
DC A96 B07 K08 P31
IN BAXTER, L S; FARR, N E; MACLEAN, B; MCINTYRE, J T; SINOFSKY, E L; WIELER, W E
PA (CARD-N) CARDIOFOCUS INC
CYC 94
PI WO 2001003599 A2 20010118 (200115)* EN 57p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2000062151 A 20010130 (200127)
ADT WO 2001003599 A2 WO 2000-US19285 20000714; AU 2000062151 A AU 2000-62151 20000714
FDT AU 2000062151 A Based on WO 200103599
PRAI US 2000-602420 20000623; US 1999-357355 19990714
AB WO 200103599 A UPAB: 20010317
NOVELTY - A phototherapeutic apparatus (10) comprising a light transmitting optical fiber (12), an optical assembly coupled to the fiber for projecting an annular beam of light and a balloon (42) surrounding the optical assembly to provide upon inflation a transmission pathway for the annular light beam from the optical assembly to a target tissue site, is new.
USE - The device is used in phototherapy using optical fibers and flexible light **waveguides** to deliver radiation to a target site, such as the heart. The device is particularly useful in **cardiac** therapy.
ADVANTAGE - Traumatic stressing of the vein or artery is reduced preventing stenosis. The unnecessary scarring of exposed tissue is avoided.
DESCRIPTION OF DRAWING(S) - The drawing shows a cross sectional view of the device including an inflated balloon attached to a flexible elongate member with the optical apparatus.
Optical apparatus 10
Conical reflector 27
Lumen 40
Balloon 42
Light energy 56
Reflectance fiber 76
Dwg.6/23

L16 ANSWER 7 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 2001-069749 [08] WPIDS

CR 1997-178867 [16]
DNN N2001-052710
TI Angiogenesis induction method for arrhythmias, ischemias, involves transmitting suitable amount of laser energy into tissue via conductor having **waveguide**, after positioning catheter adjacent to endocardium.
DC P34 S05
IN MOTAMEDI, M; WARE, D L
PA (TEXA) UNIV TEXAS SYSTEM
CYC 1
PI US 6143019 A 20001107 (200108)* 17p
ADT US 6143019 A Cont of US 1995-517961 19950822, CIP of WO 1996-US13396 19960819, US 1998-26590 19980220
FDT US 6143019 A Cont of US 5824005
PRAI US 1998-26590 19980220; US 1995-517961 19950822; WO 1996-US13396 19960819
AB US 6143019 A UPAB: 20010224
NOVELTY - Target area of tissue is identified by positioning the rear end of catheter adjacent to endocardium (30). A conductor which includes **waveguide**, is inserted into the tissue via the rear end of catheter. Volumetric hyperthermia is created in tissue by transmitting laser energy into the tissue via conductor.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
(a) inhibiting method of tissue damages due to ischemia;
(b) inhibiting method of tissue damages due to insults;
(c) endogeneous production method of heat shock proteins (HSPs) or growth factors within tissues.
USE - For non-pharmacologic treatment of **cardiac** disorders e.g. arrhythmias, ischemias, insults such as reperfusion injury.
ADVANTAGE - Enhances the potential for cure of ventricular arrhythmias in patients, as suitable amount of laser energy is passed into the tissue via conductor. Hence need for pharmacologic or surgical therapy is avoided.
DESCRIPTION OF DRAWING(S) - The figure shows the schematic view of catheter used for induction method of angiogenesis.
Endocardium 30
Dwg.3/7

L16 ANSWER 8 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 2000-672247 [65] WPIDS
DNN N2000-498375
TI Integrating **multi-waveguide** sensing system, has several **waveguides** mounted on support with their end faces perpendicular to sensing surface with **analyte** recognition elements attached.
DC S02 S03 V07
IN FELDSTEIN, M J; LIGLER, F S; MACCRAITH, B D
PA (USNA) US SEC OF NAVY
CYC 23
PI US 6137117 A 20001024 (200065)* 7p
WO 2000079240 A1 20001228 (200102) EN
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: CA JP KR
EP 1196760 A1 20020417 (200233) EN
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
ADT US 6137117 A US 1999-336729 19990621; WO 2000079240 A1 WO 2000-US7503 20000322; EP 1196760 A1 EP 2000-919511 20000322, WO 2000-US7503 20000322
FDT EP 1196760 A1 Based on WO 200079240
PRAI US 1999-336729 19990621

AB US 6137117 A UPAB: 20001214
NOVELTY - The first surface of each **waveguide** (16) has **analyte** recognition element attached, and an optical detector (28)is positioned opposite the end surface of at least one of the **waveguides**. A **number** of luminescent species are attached directly or indirectly, to some of the **analyte** recognition elements at spatially distinct locations along each of the first surfaces.
DETAILED DESCRIPTION - Analyte recognition elements on the first surface of each **waveguide** are patterned to form spatially distinct regions on the **waveguides**. Each light source is aligned to direct light exclusively to one of the spatially distinct regions on the **waveguide**, each of which captures and integrates to each respective end face and detector, light emitted by luminescent species.
AN INDEPENDENT CLAIM is made for method of detecting an analyte.
USE - For **fluorescence** excitation and detection in sensors measuring surface reactions, such as biosensors using CCD imaging, and in optical **assay** devices.
ADVANTAGE - Exhibits increased sensitivity provides sensor that minimizes cross-talk between the **waveguides**, and enhances discrimination between background excitation and an emitted signal.
DESCRIPTION OF DRAWING(S) - Drawing shows a schematic side view of an integrating **waveguide** in device according to the present invention.
Waveguide 16
Optical detector 28
Dwg.2/6

L16 ANSWER 9 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 2000-303484 [26] WPIDS
DNN N2000-226750 DNC C2000-092079
TI Diagnosing a disease state or condition using an evanescent wave detection device, especially for detecting elevated levels of albumin in the urine for diagnosis of microalbuminuria.
DC B04 D16 S03
IN FISHER, M I; GOSLING, P; MCDONNELL, M B; PAYNE, D W
PA (MINA) UK SEC FOR DEFENCE
CYC 87
PI WO 2000019203 A1 20000406 (200026)* EN 19p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW
AU 9961051 A 20000417 (200035)
EP 1116034 A1 20010718 (200142) EN
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
ADT WO 2000019203 A1 WO 1999-GB3199 19990924; AU 9961051 A AU 1999-61051 19990924; EP 1116034 A1 EP 1999-947672 19990924, WO 1999-GB3199 19990924
FDT AU 9961051 A Based on WO 200019203; EP 1116034 A1 Based on WO 200019203
PRAI GB 1998-20919 19980926
AB WO 200019203 A UPAB: 20000531
NOVELTY - Diagnosing a disease state or condition comprising contacting a sample of a biological fluid taken from a patient with a specific binding agent for a marker of the disease, and assaying for the presence of a complex between the binding agent and the marker using an evanescent wave detection device, is new .
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a detection mirror of a resonant mirror system having a specific binding agent for a biological disease marker; and

(2) an evanescent wave detection system having a specific binding agent for a marker for a disease state or condition immobilized on a detection surface, for use in the diagnosis of a disease state or condition.

USE - The methods and the device are useful for detecting the markers of disease and/or clinical and/or medical conditions in biological fluids (especially urine), especially for the detection of albumin for the diagnosis of microalbuminuria, and for monitoring any severe inflammatory condition resulting as a consequence of surgery, burn injury, acute pancreatitis, bacteremia, acute **myocardial** infarction or post respiratory/**cardiac** arrest therapy (especially trauma) (claimed).

ADVANTAGE - The method enables the rapid and/or continuous monitoring of marker levels in biological fluids, depending upon the nature of the marker, whose presence or presence at unusual levels (either elevated or depressed) may be indicative of a clinical problem.

DESCRIPTION OF DRAWING(S) - The figure shows the principles of operation of a resonant mirror system.

Dwg.0/1

L16 ANSWER 10 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 2000-183981 [17] WPIDS
DNN N2000-135741
TI Measurement of optical attenuation of fiber optical **waveguides** as indication of heart or **myocardial** contractions.
DC P31 P34 S01 S05 V07
IN HEXAMER, M; HOELAND, K; MEINE, M; NOWACK, G; WERNER, J; NOWAK, G
PA (HOEL-I) HOELAND K
CYC 82
PI DE 19836496 A1 20000217 (200017)* 5p
WO 2000009012 A1 20000224 (200018) DE
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW
W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW
AU 9956213 A 20000306 (200030)
ADT DE 19836496 A1 DE 1998-19836496 19980812; WO 2000009012 A1 WO 1999-EP5870 19990812; AU 9956213 A AU 1999-56213 19990812
FDT AU 9956213 A Based on WO 200009012
PRAI DE 1998-19836496 19980812
AB DE 19836496 A UPAB: 20000405

NOVELTY - The apparatus measures attenuation of the **waveguides** caused by their bending. At least one fiber optical **waveguide** (3) is arranged in a sensor cable in the heart and is caused to bend due to contractions of the heart.

DETAILED DESCRIPTION - Preferably the **waveguide** is optically connected to a further **waveguide** with other attenuation characteristics to achieve an increase in sensitivity and so a reduction in mechanical stress on the heart by the measurement apparatus.

USE - For measuring **myocardial** contractions for diagnostic and therapeutic applications.

ADVANTAGE - The system measures mechanical movements of the heart without the need for electric components being placed in the heart.

DESCRIPTION OF DRAWING(S) - The drawing shows a sketch of the measuring apparatus.

Waveguide 1

End 2
Waveguide 3
Plug system 4
Coupler 5
Waveguide 6
Transmitter 7
Receiver 8
Receiver 9
Measurement path 10
Detection unit 11
Dwg.1/4

L16 ANSWER 11 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 2000-182755 [16] WPIDS
CR 1998-101038 [09]; 2001-396275 [22]
DNN N2000-134721 DNC C2000-057347
TI Cleavable signal element for use in an optical disc based assay device for detecting analyte in a test sample, e.g. for nucleic acid probe detection, nucleic acid sequencing, or chemical assay of small organic or inorganic molecules.
DC B04 D16 J04 S03
IN VIRTANEN, J
PA (BURS-N) BURSTEIN LAB INC; (BURS-N) BURSTEIN TECHNOLOGIES INC
CYC 86
PI WO 2000005582 A2 20000203 (200016)* EN 232p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZA ZW
AU 9950806 A 20000214 (200029)
EP 1097378 A2 20010509 (200128) EN
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
HU 2001003577 A2 20020128 (200222)
ADT WO 2000005582 A2 WO 1999-US12395 19990720; AU 9950806 A AU 1999-50806 19990720; EP 1097378 A2 EP 1999-935299 19990720, WO 1999-US12395 19990720; HU 2001003577 A2 WO 1999-US12395 19990720, HU 2001-3577 19990720
FDT AU 9950806 A Based on WO 200005582; EP 1097378 A2 Based on WO 200005582; HU 2001003577 A2 Based on WO 200005582
PRAI US 1998-120049 19980721
AB WO 200005582 A UPAB: 20020409
NOVELTY - Cleavable signal element for use in an optical disc based assay device (I) for detecting an analyte comprising a cleavable spacer, a signal responsive moety, and slide members, is new.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:
(A) a cleavable signal element comprising:
(i) a cleavable spacer with substrate-attaching and signal-responsive ends and a cleavage site intermediate to the ends;
(ii) a signal responsive moiety; and
(iii) side members (SM1) and (SM2) adapted to bind to (optionally different) sites on the analyte, where the moety of (ii) is attached to a cleavable spacer at the signal-responsive end, SM1 is attached to a spacer intermediate and, a responsive end and a cleavage site, and SM2 is attached to a spacer intermediate, a cleavage site and a substrate attaching end;
(B) assaying for analyte by contacting (I) with a sample and detecting analyte-specific signals with an optical disc reader;

(C) making an assay for detecting analyte comprising disposing analyte-specific signal elements readably on, or within an optical disc;

(D) a monitoring device comprising an optical disc with analyte-specific signal elements adapted to function as an optical **waveguide**, and elements are disposed readably with disc's tracking features so that the specific binding of an analyte detectably alters the light-transmitting properties of the **waveguide**; and

(E) monitoring for the presence of an analyte by contacting the monitoring device of (D) with a sample and detecting alterations in the light-transmitting properties of the device's optical **waveguide**.

USE - The methods and devices are useful for detecting an analyte in a test sample, both qualitatively and quantitatively. The assay device is used in cell counting or cell shape detection, for nucleic acid probe detection or nucleic acid sequencing, for chemical assay of small organic or inorganic molecules and to detect incident radiation. It is useful for the mass analysis of patient samples for the presence or absence of a single analyte.

ADVANTAGE - The device is simple to use and can assay large numbers of test substances, i.e. analytes, in a test sample in a single step. It can be easily used for multiple quantitative assays without requiring specialized detector instrumentation. It is possible to assay for a limited number of the same **analytes** in **multiple** test samples.

DESCRIPTION OF DRAWING(S) - The diagram shows the deposition of cleavable signal elements in a pattern suitable for the assay of multiple samples in parallel, with the concurrent encoding of interpretive software on central tracks.

Dwg.11C/44

L16 ANSWER 12 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 2000-013733 [01] WPIDS
DNN N2000-010607 DNC C2000-002777
TI Highly doped laser and amplifier used for ultrafine intra-ocular, endoscopic laser surgery.
DC L03 P81 S02 S05 V07 V08
IN JAIN, R; POPPE, E; SRINIVASAN, B
PA (UYNE-N) UNIV NEW MEXICO STATE
CYC 22
PI WO 9957586 A1 19991111 (200001)* EN 40p
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: AU CA JP MX
AU 9937720 A 19991123 (200016)
ADT WO 9957586 A1 WO 1999-US9341 19990430; AU 9937720 A AU 1999-37720 19990430
FDT AU 9937720 A Based on WO 9957586
PRAI US 1998-83772P 19980501
AB WO 9957586 A UPAB: 20000105

NOVELTY - The **waveguide** consists of a clusters of dopant comprising an erbium (Er). The Dopant has concentration between 1001-500000 ppm. The clusters of dopant enhances cross- relaxation (12,14) between two element of dopant.

DETAILED DESCRIPTION - The **waveguide** is composed of low phonon energy material selected from group comprising ZrF4, HfF4, BaF2, SrF2, LaF3, YF3, AlF3, KF, NaF, LiF, chalcogenides, tellurides, silicates and chelates.

USE - For ultrafine intra-ocular, endoscopic laser surgery including trans **myocardial** revascularization and intra-arterial procedure.

ADVANTAGE - Offers improved highly doped fiber laser with high efficiency and high power output. Eliminates bottleneck associated with longer lifetime.

DESCRIPTION OF DRAWING(S) - The figure shows energy level diagram

showing cross-relaxation process.
cross- relaxation 12,14
Dwg.1/10

L16 ANSWER 13 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1999-494187 [41] WPIDS
DNN N1999-368137 DNC C1999-144814
TI Apparatus for intracardiac drug delivery, useful for treatment of **cardiac** ischemia.
DC B04 B07 P31 P34 S05
IN HAIM, S B; MATCOVITCH, A; YARON, U; BEN HAIM, S
PA (BIOS-N) BIOSENSE INC; (HAIM-I) HAIM S B; (MATC-I) MATCOVITCH A; (YARO-I) YARON U
CYC 75
PI WO 9939624 A1 19990812 (199941)* EN 46p
RW: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH HU IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW
AU 9867563 A 19990823 (200005)
EP 980226 A1 20000223 (200015) EN
R: ES FR GB IT NL
US 6254573 B1 20010703 (200140)#
US 6309370 B1 20011030 (200172)#
US 2002013615 A1 20020131 (200210)#
ADT WO 9939624 A1 WO 1998-US2195 19980205; AU 9867563 A AU 1998-67563 19980205; EP 980226 A1 EP 1998-912875 19980205, WO 1998-US2195 19980205; US 6254573 B1 Cont of US 1998-19453 19980205, US 1999-383890 19990826; US 6309370 B1 US 1998-19453 19980205; US 2002013615 A1 Div ex US 1998-19453 19980205, US 2001-904127 20010712
FDT AU 9867563 A Based on WO 9939624; EP 980226 A1 Based on WO 9939624; US 2002013615 A1 Div ex US 6309370
PRAI WO 1998-US2195 19980205; US 1999-383890 19990826; US 2001-904127 20010712
AB WO 9939624 A UPAB: 20000323
NOVELTY - Apparatus includes a catheter (64) which is inserted into a chamber of the heart where it is brought into engagement with a site for drug delivery. A sensor generates signals responsive to the position of the catheter in the heart. A hollow needle (24) administers a desired drug dosage responsive to the signals from the sensor.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM relates to intracardiac therapy. Signals are received indicative of variations in the thickness of a wall of the heart. A therapeutic treatment is administered to a site in the heart wall responsive to thickness variations.

Preferred Features: The catheter includes a contact sensor on a distal surface to sense contact of the surface with the heart wall. The sensor may be a pressure sensor or a magnetic position sensor which generates signals responsive to an externally applied magnetic field. The position sensor generates position and orientation coordinates to which the drug delivery device is response. The catheter may include a physiological sensor generating signals indicative of the viability of heart tissue at the site. A viability map of the heart may be generated based on the signals. The drug is administered in response to the map. The catheter may include a **waveguide** communicating with a radiation source for irradiation of the **myocardial** tissue. This may create a channel in the tissue into which the drug is delivered. The drug may be contained in a slow-release solid capsule. The drug delivery device has a hollow needle (24) which extends distally from the catheter to penetrate the heart tissue. It may be fastened in the heart wall by rotational

movement of the needle. The needle may be retracted into the catheter before and after the drug is delivered. The depth of needle penetration is controlled. A controller gates the treatment so that the drug is administered during a specific portion of the heart cycle, e.g. when the thickness is at a maximum or minimum.

USE - Intracardiac drug delivery for treating **cardiac** ischemia. The drug administered may be a growth factor.

ADVANTAGE - The method is minimally invasive and allows accurate placement of controlled-release drug delivery devices.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic section of a human heart with the catheter inserted for drug delivery.

hollow needle 24

catheter 64

Dwg.5/7

L16 ANSWER 14 OF 27 WPIDS (C) 2002 THOMSON DERWENT

AN 1999-244078 [20] WPIDS

DNN N1999-181611 DNC C1999-071242

TI Assay system for real time diagnosis of **cardiac** disease state.

DC B04 J04 S03

IN CHRISTENSEN, D A; DURTSCHI, J D; HERRON, J N

PA (UTAH) UNIV UTAH RES FOUND; (CHRI-I) CHRISTENSEN D A; (DURT-I) DURTSCHI J D; (HERR-I) HERRON J N

CYC 82

PI WO 9914594 A1 19990325 (199920)* EN 53p

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW

W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW

AU 9893974 A 19990405 (199933)

EP 1019717 A1 20000719 (200036) EN

R: DE FR GB NL SE

US 6222619 B1 20010424 (200125)

US 2001019405 A1 20010906 (200154)

US 2001030741 A1 20011018 (200166)

JP 2001516879 W 20011002 (200172) 57p

ADT WO 9914594 A1 WO 1998-US19475 19980918; AU 9893974 A AU 1998-93974 19980918; EP 1019717 A1 EP 1998-947120 19980918, WO 1998-US19475 19980918; US 6222619 B1 US 1997-933203 19970918; US 2001019405 A1 Div ex US 1997-933203 19970918, US 2001-839778 20010420; US 2001030741 A1 Div ex US 1997-933203 19970918, Cont of US 2001-839778 20010420, US 2001-877635 20010608; JP 2001516879 W WO 1998-US19475 19980918, JP 2000-512079 19980918

FDT AU 9893974 A Based on WO 9914594; EP 1019717 A1 Based on WO 9914594; US 2001019405 A1 Div ex US 6222619; US 2001030741 A1 Div ex US 6222619; JP 2001516879 W Based on WO 9914594

PRAI US 1997-933203 19970918; US 2001-839778 20010420; US 2001-877635 20010608

AB WO 9914594 A UPAB: 19990525

NOVELTY - An **assay** system receives a biological liquid sample. It outputs a light signal indicative of the rate of reaction between an analyte of interest and a reactive element in the system. The emitted light is continuously measured over time. The rate of reaction is continuously correlated to a concentration of the analyte of interest. The concentration is determined in less than five minutes.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM relates to a method of performing an **assay** in which a **number** of **analytes** in a sample are **simultaneously** detected, one of

which has known parameters indicative of an acute metabolic or disease state. The concentrations of the **analytes** are **simultaneously** determined. The measurements are continued until an amount of the one **analyte** indicative of the metabolic or disease state has been reliably detected. Preferred Features:- The system uses a light source (216) and a biosensor (190). This includes a **waveguide** (164) having a planar surface (172) associated with capture molecules. The biological liquid sample is flowed through the biosensor to contact the capture molecules. A light detector (230) detects light passed through the planar surface. The **analyte** of interest is an ischemic marker, especially **troponin** I, CK-MB or **myoglobin**.

USE - The system provides a point-of-care device providing a quick differential diagnosis of a **myocardial** infarction or similar event.

ADVANTAGE - The system provides diagnosis of an ischemic event in a short time, preferably about two minutes. This allows timely treatment.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic of a **fluorescent assay** apparatus.

waveguide 164
planar surface of **waveguide** 172
biosensor 190
light source 216
light detector 230
Dwg.8/21

L16 ANSWER 15 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1999-179645 [15] WPIDS
DNN N1999-131929
TI Transmyocardial revascularization (TMR) method using laser.
DC P34 S05
IN CHIM, N; CHOU, M M
PA (CHIM-I) CHIM N; (CHOU-I) CHOU M M
CYC 1
PI US 5873366 A 19990223 (199915)* 6p
ADT US 5873366 A US 1996-744397 19961107
PRAI US 1996-744397 19961107
AB US 5873366 A UPAB: 19990416

NOVELTY - The heart (10) is temporarily stopped from beating by inducing a brief period of asystole with a duration of less than approximately one minute. A blood flow channel (26) having fluid connection with a chamber of the heart is created within a wall (12) of the heart during the brief period of asystole and then the heart is allowed to resume beating.

USE - For surgical treatment of cardiovascular disease, also for use in conjunction with cardioplegia method.

ADVANTAGE - Provides improved method for transmyocardial revascularization resulting in more accurate and efficient application of laser energy. Clearly defined passages are ablated through **myocardial** tissue without inducing significant thermal damage to the surrounding myocardium.

DESCRIPTION OF DRAWING(S) - The figure shows the schematic representation of method for performing transmyocardial revascularization using percutaneous transmyocardial infravascular approach.

Heart 10
Wall 12
Blood flow channel 26
Dwg.2/2

L16 ANSWER 16 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1998-495465 [42] WPIDS

DNN N1998-387027
TI **Myocardial** revascularisation device measuring appts.. - Uses ultrasonic transducer attached to **waveguide** in catheter to produce echo from epicardial and endocardial surfaces..
DC P31 S05
IN KESTEN, R J
PA (CARD-N) CARDIOGENESIS CORP
CYC 82
PI WO 9838916 A1 19980911 (199842)* EN 23p
RW: AT BE CH DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW
W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM GW HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW
AU 9863479 A 19980922 (199908)
EP 1014860 A1 20000705 (200035) EN
R: AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
US 6086534 A 20000711 (200037)
ADT WO 9838916 A1 WO 1998-US4569 19980306; AU 9863479 A AU 1998-63479 19980306; EP 1014860 A1 EP 1998-907743 19980306, WO 1998-US4569 19980306; US 6086534 A US 1997-812656 19970307
FDT AU 9863479 A Based on WO 9838916; EP 1014860 A1 Based on WO 9838916
PRAI US 1997-812656 19970307
AB WO 9838916 A UPAB: 19981028
The appts. is used to measure the distance between the operative distal end of a **myocardial** revascularisation device and the endocardial and epicardial surfaces of the heart wall of the patient. The appts. (10) comprises a catheter (12) with a lumen (16) which carries a laser **wave guide** (17). An ultrasonic transducer (20) is secured to the distal end (19) of the **wave guide**.

The transducer emits bursts of ultrasonic energy and receives a returned ultrasonic echo from the heart wall. The echo is processed by a signal processor for display to show the distance between the epicardial and the endocardial surfaces of the heart wall and the device.

ADVANTAGE - Provides information on the thickness of the heart wall at the precise location where the revascularisation energy is discharged.
Dwg.1/4

L16 ANSWER 17 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1998-031632 [03] WPIDS
CR 1994-365955 [45]; 1995-022257 [03]; 1999-560912 [47]
DNN N1998-025503
TI Tunable microwave ablation catheter system - impedance matching power supply and catheter microwave transmission components.
DC P31 S05 W02 X25
IN GRUNDY, D A; MEAD, R H; WARNER, G G
PA (FIDU-N) FIDUS MEDICAL TECHNOLOGY CORP
CYC 1
PI US 5693082 A 19971202 (199803)* 24p
ADT US 5693082 A CIP of US 1993-62637 19930514, CIP of US 1993-163178 19931203, US 1994-300948 19940906
FDT US 5693082 A CIP of US 5364392, CIP of US 5405346
PRAI US 1994-300948 19940906; US 1993-62637 19930514; US 1993-163178 19931203
AB US 5693082 A UPAB: 19991116
The system uses a tuner to compensate for impedance variation of the power supply during use. The tuner (30) is a double stub tuner, alternatively a single or triple stub tuner or stub stretcher is used. The double stub tuner (302) is coupled on each end to coaxial cables serving as microwave

waveguides. The tuner stub arms (105,106) receive plungers (308,109). A pair of motorised drive units (112) are associated with one plunger arm. Each drive unit motor is controlled by a controller which receives a signal of the magnitude of the reflected power from the directional coupler (28). It adjusts the tuning mechanism via a servo or stepper motor controller (119). The tuning system is manually adjustable.

USE - For **cardiac** application.

ADVANTAGE - Minimises reflected power, maximises catheter to tissue coupling.

Dwg.2/13

L16 ANSWER 18 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1997-511877 [47] WPIDS
CR 1995-006958 [01]; 1995-106943 [14]; 1998-414056 [35]; 1999-477860 [40]; 2002-121023 [76]
DNN N1997-426175
TI Homogeneous solid-state **fluorescence immunoassay** apparatus - uses biosensor with lens that has light beam aimed at it with reservoirs formed on surface of **waveguide** that contain sample solution containing tracer molecules that emit **fluorescent** light on stimulation with beam of light.
DC S03
IN CALDWELL, K D; CHRISTENSEN, D A; HERRON, J N; HUANG, S; JANATOVA, V; WANG, H
PA (UTAH) UNIV UTAH RES FOUND
CYC 1
PI US 5677196 A 19971014 (199747)* 33p
ADT US 5677196 A CIP of US 1993-64608 19930518, CIP of US 1993-71579 19930602, CIP of US 1993-110169 19930820, US 1994-263522 19940622
FDT US 5677196 A CIP of US 5512492, CIP of US 5516703
PRAI US 1994-263522 19940622; US 1993-64608 19930518; US 1993-71579 19930602; US 1993-110169 19930820
AB US 5677196 A UPAB: 20020308
The **immunoassay** apparatus has a biosensor with a planar **waveguide** that has two parallel plane surfaces with a surrounding edge extending between the two surfaces. The edge has a region for receiving light, and at least one of the surfaces having a **number** of capture molecules immobilized on it. The capture molecules each having a binding site which selectively binds an **analyte**. A semi-cylindrical lens is located adjacent to the edge of the planar **waveguide**.

A light beam is provided in a desired wavelength range and is aimed into the lens. Reservoirs are formed on the **waveguide** surfaces and contain a sample solution comprising a buffer, several molecules and analyte. Several tracer molecules emit **fluorescent** light upon stimulation with evanescent light resulting from the beam. A detector directly detects a **fluorescence** signal consisting essentially of **fluorescent** light, and collects the **fluorescent** light.

USE/ADVANTAGE - Provides low non-specific binding and has uniformly oriented capture molecules. Inexpensive and readily used by non-skilled people.

Dwg.6/19

L16 ANSWER 19 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1997-448828 [41] WPIDS
DNN N1997-373987 DNC C1997-143180
TI Detection of target analytes - using **waveguide** with discrete specific binding partners for analytes and irradiation with laser light.
DC B04 D16 J04 S03
IN OBREMSKI, R; SILZEL, J W; OBREMSKI, R J

PA (BECI) BECKMAN COULTER INC; (BECI) BECKMAN INSTR INC
CYC 19
PI WO 9732212 A1 19970904 (199741)* EN 50p
RW: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: JP
EP 904542 A1 19990331 (199917) EN
R: DE FR GB
US 6110749 A 20000829 (200043)
ADT WO 9732212 A1 WO 1997-US2748 19970224; EP 904542 A1 EP 1997-906727 19970224, WO 1997-US2748 19970224; US 6110749 A Cont of US 1996-609410 19960301, US 1997-923786 19970904
FDT EP 904542 A1 Based on WO 9732212
PRAI US 1996-609410 19960301; US 1997-923786 19970904
AB WO 9732212 A UPAB: 19971013
Method for detecting a target analyte (TA) in a sample is claimed, comprising:
(a) providing a detector comprising a **waveguide** having discrete probes, each including a specific binding partner (sbp) for a selected analyte, at least 1 of the probes being a responsive probe that includes a sbp for the target analyte;
(b) applying the sample to the detector such that the TA binds to its sbp;
(c) passing laser light into the detector so that evanscent light radiates from the **waveguide** and impinges on the probes, where light, if any, emitted from a probe with TA bound to it is different from the light, if any, emitted by the same probe without TA bound to it, and
(d) detecting emission of light from the probes.
USE - The systems can be used for the detection and quantification of TAs such as DNA/RNA, hormones, drugs, proteins, antigens, antibodies, toxins or polysaccharides.
ADVANTAGE - The systems can rapidly detect analytes at low concentrations (e.g. down to 10-13 M). The water permeable overlayer can improve the containment of the laser beam within the substrate and thereby reduce background noise and interference. The systems can simultaneously test for **multiple analytes** or can test multiple samples for a single analyte.
Dwg.0/5

L16 ANSWER 20 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1996-424533 [42] WPIDS
CR 1995-060219 [08]
DNN N1996-357520
TI Intra-operative **myocardial** revascularisation method - inserting part of elongated flexible lasing appts into chest cavity of patient, and lasing channels from epicardium through the myocardium of heart, without mechanical tearing of heart tissue.
DC P31 S05
IN AITA, M; CAYTON, M; GUSCOTT, B; MIRHOSEINI, M; SIMPSON, C J
PA (CARD-N) CARDIOGENESIS CORP
CYC 1
PI US 5554152 A 19960910 (199642)* 6p
ADT US 5554152 A Cont of US 1990-630259 19901218, Cont of US 1993-79699 19930616, US 1994-361787 19941220
FDT US 5554152 A Cont of US 5380316
PRAI US 1990-630259 19901218; US 1993-79699 19930616; US 1994-361787 19941220
AB US 5554152 A UPAB: 19961021
The method of forming a channel in a desired portion of a wall of a patient's heart from the exterior involves providing an elongated flexible laser **wave guide** system having proximal and distal

ends, and guiding a distal portion of the elongated flexible laser **wave guide** within the patient's chest cavity to the exterior portion of the wall of the patient's heart through which a channel is to be formed.

The distal end of the flexible laser **wave guide** system is maintained against tissue of the heart wall through which the channel is to be formed, while transmitting laser energy from a remote laser source through the laser **wave guide** system and out the distal end in a beam onto the tissue of the heart wall with sufficient energy and for a sufficient length of time to form a channel through the wall of the patient's heart.

USE/ADVANTAGE - Surgical procedures for improving flow of blood to heart muscle. Procedure does not require mechanical perforation of heart, and can access difficult to reach parts of heart.

Dwg.1/3

L16 ANSWER 21 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1995-022257 [03] WPIDS
CR 1994-365955 [45]; 1998-031632 [03]; 1999-560912 [47]
DNN N1995-017400
TI Medical catheter with turnable microwave energy emission - has flexible tubular member alterable in length by push plate and activator coupled at distal end of transmission line and proximal end coupled to power supply.
DC P31 S05 U24 W02 X25
IN GRUNDY, D A; MEAD, R H; WARNER, G G; MEAD, R
PA (FIDU-N) FIDUS MEDICAL TECHNOLOGY CORP
CYC 21
PI WO 9426188 A1 19941124 (199503)* EN 37p
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: AU CA CN JP
US 5405346 A 19950411 (199520) 17p
AU 9469127 A 19941212 (199521)
EP 697842 A1 19960228 (199613) EN 37p
R: DE DK ES FR GB IT NL PT SE
EP 697842 A4 19961227 (199721)
ADT WO 9426188 A1 WO 1994-US5375 19940512; US 5405346 A CIP of US 1993-62637 19930514, US 1993-163178 19931203; AU 9469127 A AU 1994-69127 19940512; EP 697842 A1 EP 1994-917385 19940512, WO 1994-US5375 19940512; EP 697842 A4 EP 1994-917385
FDT US 5405346 A CIP of US 5364392; AU 9469127 A Based on WO 9426188; EP 697842 A1 Based on WO 9426188
PRAI US 1993-163178 19931203; US 1993-62637 19930514
AB WO 9426188 A UPAB: 19991116
The catheter system (20) comprises a flexible tubular member (50) adapted to be inserted into a vessel in the body of a patient. A coaxial transmission line is disposed within the member. The line has proximal and distal ends with the proximal end connected to a radio frequency energy source (22). A helical antenna (53), carried by the distal end of the line, generates an electric field sufficiently strong to cause tissue ablation.

The geometry of the antenna may be altered during use in a controlled manner to alter the effective impedance to permit turning of the catheter by compensating for variations in the impedance. The turning arrangement is by altering the length of the antenna. The pitch of the antenna or diameter may be altered. A thrust plate and actuator alters the length of the catheter.

USE/ADVANTAGE - Ablating internal body materials in treatment of **cardiac** arrhythmias. System matches impedance of power supply and transmission line to minimise reflected power and optimise efficiency of delivery of energy.

Dwg.1/13

L16 ANSWER 22 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1995-006958 [01] WPIDS
CR 1995-106943 [14]; 1997-511877 [47]; 1998-414056 [35]; 1999-477860 [40]; 2002-121023 [76]
DNN N1995-005603 DNC C1995-002508
TI Appts. and methods for **multi-analyte** homogeneous **fluoro-immunoassays** - comprising a bio-sensor consisting of a planar **waveguide** having a surface on which are immobilised capture molecules specific for the **analyte**.
DC A89 B04 J04 S03
IN CALDWELL, K D; CHRISTENSEN, D A; HERRON, J N; HUANG, S; JANATOVA, V; WANG, H; JANATOVA, V N P; JANATOVA', V
PA (UTAH) UNIV UTAH RES FOUND
CYC 49
PI WO 9427137 A2 19941124 (199501)* EN 60p
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL OA PT SE
W: AT AU BB BG BR BY CA CH CN CZ DE DK ES FI GB GE HU JP KP KR KZ LK LU LV MG MN MW NL NO NZ PL PT RO RU SD SE SK UA UZ VN
AU 9473116 A 19941212 (199522)
WO 9427137 A3 19950119 (199611)
EP 700514 A1 19960313 (199615) EN
R: AT BE CH DE DK ES FR GB GR IE IT LI LU NL PT SE
US 5512492 A 19960430 (199623) 22p
JP 08510331 W 19961029 (199705) 67p
US 5846842 A 19981208 (199905)
AU 704947 B 19990506 (199929)
AU 9943416 A 19991028 (200005)
EP 700514 B1 20011128 (200201) EN
R: AT BE CH DE DK ES FR GB GR IE IT LI LU NL PT SE
US 6340598 B1 20020122 (200208)
DE 69429262 E 20020110 (200211)
ADT WO 9427137 A2 WO 1994-US5567 19940518; AU 9473116 A AU 1994-73116 19940518; WO 9427137 A3 WO 1994-US5567 19940518; EP 700514 A1 EP 1994-923161 19940518, WO 1994-US5567 19940518; US 5512492 A US 1993-64608 19930518; JP 08510331 W JP 1994-525810 19940518, WO 1994-US5567 19940518; US 5846842 A Div ex US 1993-64608 19930518, US 1996-640141 19960430; AU 704947 B AU 1994-73116 19940518; AU 9943416 A Div ex AU 1994-73116 19940518, AU 1999-43416 19990805; EP 700514 B1 EP 1994-923161 19940518, WO 1994-US5567 19940518; US 6340598 B1 Div ex US 1993-64608 19930518, Div ex US 1996-640141 19960430, US 1998-207187 19981208; DE 69429262 E DE 1994-629262 19940518, EP 1994-923161 19940518, WO 1994-US5567 19940518
FDT AU 9473116 A Based on WO 9427137; EP 700514 A1 Based on WO 9427137; JP 08510331 W Based on WO 9427137; US 5846842 A Div ex US 5512492; AU 704947 B Previous Publ. AU 9473116, Based on WO 9427137; AU 9943416 A Div ex AU 704947; EP 700514 B1 Based on WO 9427137; US 6340598 B1 Div ex US 5512492, Div ex US 5846842; DE 69429262 E Based on EP 700514, Based on WO 9427137
PRAI US 1993-71579 19930602; US 1993-64608 19930518; US 1996-640141 19960430; US 1998-207187 19981208
AB WO 9427137 A UPAB: 20020308
An appts. for homogeneous solid-state **fluorescence immunoassays** comprises a biosensor having: (a) a planar **waveguide** with first and second parallel plane surfaces with an edge extending between these surfaces, the edge having a receiving region for receiving light and at least 1 of the surfaces having capture mols. immobilised on it (each mol. having a binding site specific for an analyte); and (b) a semi-cylindrical lens integrally adapted to the **waveguide** adjacent the receiving edge. Also claimed are: (1) an optical substrate useful for a solid state **assay** in which a

capture mol. used to specifically capture a corresp. analyte for detection of the analyte by means of a light signal is coupled to the optical substrate. The substrate comprises an optical surface having a region coated with a material providing an acceptably low amt. of non-specific binding to the substrate. The coating is selected from: hydrogel formed from polymethacryloyl polymers, a silyl- derivatised polyethyleneglycol, avidin, and block copolymers. The block copolymers consists essentially of hydrophobic residues adjacent at least 1 hydrophilic polymer block consisting of hydrophilic residues; (2) a method of making the optical substrate of (1) by coating a region of an optical substrate with a coating selected from the materials listed above; and (3) a method of performing a solid-state **fluoroimmunoassay**, comprising: (a) providing a biosensor as described above; (b) providing a light source to deliver a light beam into the **waveguide** through the semi-cylindrical lens; (c) providing detection means disposed for detecting **fluorescent** light which impinges on a plane parallel to and displaced from the **waveguide** surfaces; (d) contacting the **waveguide** surface (on which the capture molecules are immobilised) with a soln. comprising a buffer, tracer mols. capable of binding to the capture mol. in the presence of the analyte, and of emitting a **fluorescent** signal upon stimulation with a light beam, and an unknown amt. of analyte mols.; (e) incubating the **waveguide** surface with the contacting soln. to permit binding of the tracer mols. to the analyte mols. and the capture mols.; (f) operating the light source to produce evanescent light from the **waveguide** to stimulate the tracer mols.; (g) operating the detection means to detect the **fluorescent** signals emitted by the tracer mols.; and (h) analysing the signals to determine the amt. of the analyte in the test sample.

USE - The methods and appts. may be used for **multianalyte** homogeneous **fluoroimmunoassays**.

ADVANTAGE - The appts. is more sensitive with less non-specific binding occurring compared to previous methods which used immobilised antibodies.

Dwg.0/18

L16 ANSWER 23 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1993-126235 [15] WPIDS
DNN N1993-096352
TI Microwave detection system for gaseous emboli e.g. for medical use - monitors amplitude of microwave radiation from liquid and senses amplitude drop representing bubble in liquid.
DC P31 P34 S03 S05
IN CARR, K L
PA (MICR-N) MICROWAVE MEDICAL SYSTEMS INC
CYC 1
PI US 5198776 A 19930330 (199315)* 15p
ADT US 5198776 A US 1991-721107 19910626
PRAI US 1991-721107 19910626
AB US 5198776 A UPAB: 19930924
The system for detecting the passage of gaseous emboli through a portion of conduit having liquid contents includes a microwave radiometer which detects energy in the microwave spectrum, a microwave **waveguide** which directs emitted microwave energy from the contents of the portion of the conduit to the radiometer. A signal conversion section converts the energy at the radiometer into an output signal related to the amplitude of radiation from the conduit. The system also includes a source of a controlled reference signal, and a comparator which compares the output signal with the reference signal, recognises a change in the comparison results indicative of entry of a gaseous embolus into the conduit portion.

USE/ADVANTAGE - Eg for avoiding air embolism **cardiac** and cerebral circulation systems. Non-invasive, sterile, passive method with fast response time.
1/11

L16 ANSWER 24 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1993-054706 [07] WPIDS
CR 1990-249032 [33]
DNN N1993-041777
TI Fluorimeter for examining fluorescent material sample - has sample receiver with separate areas, each illuminated by electromagnetic radiation source, detector sensing radiation emitted by given sample area, and **waveguide** connections between components.
DC S03
IN EDMONDS, T E; MILLER, J N; SEARE, M J; SEARE, N J
PA (LOUG-N) LOUGHBOROUGH CONSULT LTD
CYC 1
PI GB 2258728 A 19930217 (199307)* 25p
GB 2258728 B 19930707 (199327) 2p
ADT GB 2258728 A Derived from GB 1988-28476 19881206, GB 1992-20976 19921006;
GB 2258728 B Derived from GB 1988-28476 19881206, GB 1992-20976 19881206
PRAI GB 1988-28476 19881206; GB 1992-20976 19921006
AB GB 2258728 A UPAB: 19931116
The fluorimeter includes a holder, for receiving samples of fluorescent material, which has a number of separate areas. A source of electromagnetic radiation illuminates each sample area and a detector senses the emitted electromagnetic radiation from a given sample.

The detector comprises a filter having a number of different portions, each interposed in the path of the incident or emitted radiation to select a given wavelength which is allowed to pass through the device. A motor repeatedly positions selected filter portions, in turn, in the sample radiation paths.

ADVANTAGE - Can perform **simultaneous** fluorescent **number** of **analytes**, with different sample dyes detectable by different radiation wavelengths.
1/2
Dwg.1/2

L16 ANSWER 25 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1989-248867 [34] WPIDS
TI Heart catheter for percutaneous valvotomy using laser radiation - has positioning mechanism with at least one pair of wires along catheter.
DC P31 P34 S05
IN RADTKE, W A K; RADTKE, W
PA (RADT-I) RADTKE W A K; (RADT-I) RADTKE W
CYC 30
PI WO 8906935 A 19890810 (198934)* DE 21p
RW: AT BE CH DE FR GB IT LU NL OA SE
W: AT AU BB BG BR CH DE DK FI GB HU JP KR LK LU MC MG MW NL NO RO SD SE SU US
DE 3803697 A 19890817 (198934)
AU 8929206 A 19890825 (198947)
CN 1036140 A 19891011 (199031)
DE 3990071 T 19901122 (199048)#
EP 401230 A 19901212 (199050)
R: DE FR GB IT
US 5188635 A 19930223 (199310) 7p
EP 401230 B1 19931006 (199340) DE 9p
R: DE FR GB IT
DE 58905850 G 19931111 (199346)

ADT WO 8906935 A WO 1989-EP5 19890105; DE 3803697 A DE 1988-3803697 19880208; DE 3990071 T DE 1989-3990071 19890105; EP 401230 A EP 1989-901282 19890105; US 5188635 A WO 1989-EP5 19890105, US 1990-573021 19900802; EP 401230 B1 EP 1989-901282 19890105, WO 1989-EP5 19890105; DE 58905850 G DE 1989-505850 19890105, EP 1989-901282 19890105, WO 1989-EP5 19890105
FDT US 5188635 A Based on WO 8906935; EP 401230 B1 Based on WO 8906935; DE 58905850 G Based on EP 401230, Based on WO 8906935
PRAI DE 1988-3803697 19880208; WO 1989-EP5 19890105
AB WO 8906935 A UPAB: 19930923
The positioning mechanism is operated pref. from the proximal catheter end, so that the wires (2, 3) are flexed to form two mutually crossing convex wire arcs axially displaced to each other and projecting radially above the surface of the catheter. In the region of the intersection the wires form an indent (25) for positively anchoring on to the heart valve. At least one photoconductor (14) is provided for transmitting laser radiation from a radiation source to a radiation outlet (4) in the vicinity of the catheter distal end and is attached to at least one of the wires (2,3).

The catheter can be positioned in a beating heart without interrupting the blood flow, in such a way that the laser beam can be accurately aligned on the place of application on the heart valve.

USE/ADVANTAGE - Heart catheter using laser beam for surgery. No necessity to close vessel or organ and catheter can be exactly positioned and anchored to vessel or organ part or obstruction allowing release, for desired focussing of laser beam on application place for incision.
2/7

L16 ANSWER 26 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1986-083326 [13] WPIDS
DNN N1986-060894 DNC C1986-035522
TI Dielectric **waveguide** sensors - used in spectrophotometric immunoassays.
DC B04 D16 J04 S03 S05 V07
IN KECK, D B; LOVE, W F
PA (CIBA) CIBA CORNING DIAGNOSTICS CORP; (CORG) CORNING GLASS WORKS; (DOWC) DOW CHEM CO
CYC 12
PI EP 175585 A 19860326 (198613)* EN 24p
R: AT BE DE FR GB IT NL
AU 8547639 A 19860327 (198620)
US 4880752 A 19891114 (199004)
CA 1266998 A 19900327 (199017)
CA 1269546 A 19900529 (199028)
EP 175585 B 19910925 (199139)
R: AT BE DE FR GB IT NL
DE 3584210 G 19911031 (199145)
JP 61089528 A 19860507 (199432)
JP 06064063 B2 19940822 (199432) 6p
KR 9612557 B1 19960923 (199926)
ADT EP 175585 A EP 1985-306711 19850920; US 4880752 A US 1989-298524 19890224; JP 61089528 A JP 1985-208548 19850920; JP 06064063 B2 JP 1985-208548 19850920; KR 9612557 B1 KR 1988-10333 19880813
FDT JP 06064063 B2 Based on JP 61089528
PRAI US 1984-652714 19840921; US 1985-773074 19850906; US 1987-85423 19870813; US 1989-298524 19890224
AB EP 175585 A UPAB: 19930922
Dielectric **waveguide** for use in a spectrophotometric assay of an **analyte** (A) in a fluid comprises a core having an index of refraction (N1) and an opening in the core, a cladding about the core having an index of refraction (N2) which is less than N1, and a reactant

(R) coating on the core which, in the presence of electromagnetic radiation, interacts with A to form a signal radiation. A **multi** -element dielectric **waveguide** is also claimed comprising a support fibre of refraction index with an opening, a second core fibre axially positioned within the support fibre opening, of refraction index (NB), and a means to maintain the axial position. In a further embodiment (also claimed) the core of refraction index (Nx) is covered with a series of claddings having alternating indices of refraction (N2) and (N1) where N2 is less than N1 and only one of either can equal Nx, and of such a **number** and configuration so as to enable electromagnetic radiation to propagate within the core opening.

USE - The **waveguides** are used in spectrophotometric assays by contacting with the fluid contg. (A) for sufficient time to react with (R), propagating radiation down the **waveguide** core so as to irradiate the interacting (A) and (R), and detecting the signal radiation resulting from the irradiation of the (A) interaction by monitoring the **waveguide** (methods claimed). The new fibre optic sensors are esp. useful in immunoassays. The (R) coating is typically an immobilised antibody or antigen or it may be an enzyme.

0/4

L16 ANSWER 27 OF 27 WPIDS (C) 2002 THOMSON DERWENT
AN 1982-L6635E [35] WPIDS
TI Microprobe for monitoring biological and neural activity - has insulated dielectric **waveguide** for polarising and focusing Gunn diode power output into highly localised beam.
DC P31 S05
IN ROSENBERG, B
PA (AABY-I) AABY T
CYC 1
PI US 4344440 A 19820817 (198235)* 16p
PRAI US 1980-136317 19800401
AB US 4344440 A UPAB: 19930915

The microprobe consists of a Gunn diode feeding power into a short, insulated dielectric **waveguide**, the free end of which houses a point contact semiconductor diode isolated by a metal shield from the incident beam. The **wave guide** concentrates and delivers a pencil shaped beam into the tissue of interest and the back-scattered radiation is modulated and detected by the diode. The detected signal is filtered, amplified and recorded to reflect on-going biological activity.

The receiver electronics is housed in a small self-contained package and has its output connected through a flexible attachment to two ear tubes which enable continuous monitoring of the audio response through an electrical and audio converter indicative of the on-going biological activity. By scanning step wise across the chest, the microprobe allows localisation of many details of **cardiac** activity. The microprobe can also be used to monitor activities of the brain and the spinal cord.

```
=> d his

     (FILE 'WPIDS' ENTERED AT 13:25:07 ON 03 JUN 2002)
               DEL HIS

     FILE 'BIOSIS' ENTERED AT 13:27:06 ON 03 JUN 2002
L1           545 S WAVEGUIDE# OR WAVE GUIDE#
L2        386612 S ?CARDIAC OR ?CARDIAL OR MYOGLOBIN# OR TROPONIN# OR CREATINE K
L3             4 S L1 AND L2
L4          3656 S MULTIANALYT? OR MULTI? (2A) ANALYT?
L5             8 S L1 AND L4
L6        499710 S ?ASSAY?
L7            48 S L1 AND L6
L8             0 S L7 AND L2
L9             8 S L7 AND L4
L10           12 S L3 OR L5 OR L9
L11         9531 S ?ANALYTE?
L12           37 S L1 AND L11
L13            0 S L12 AND L2
L14           20 S L12 AND L6
L15           25 S L10 OR L14

     FILE 'BIOSIS' ENTERED AT 13:31:18 ON 03 JUN 2002

=> d cost
COST IN U.S. DOLLARS                          SINCE FILE      TOTAL
                                                 ENTRY    SESSION
CONNECT CHARGES                                   0.77     114.37
NETWORK CHARGES                                   0.06       3.00
DISPLAY CHARGES                                  62.83     216.48
                                              -------    -------
                                                 63.66     333.85
CAPLUS FEE (5%)                                   0.00       5.09
                                              -------    -------
FULL ESTIMATED COST                              63.66     338.94

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)    SINCE FILE      TOTAL
                                                 ENTRY    SESSION
CA SUBSCRIBER PRICE                               0.00     -13.01

IN FILE 'BIOSIS' AT 13:31:40 ON 03 JUN 2002


=>
```

```
=> fil biosis
FILE 'BIOSIS' ENTERED AT 13:31:18 ON 03 JUN 2002
COPYRIGHT (C) 2002 BIOLOGICAL ABSTRACTS INC.(R)

FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 29 May 2002 (20020529/ED)


=> d his


     (FILE 'WPIDS' ENTERED AT 13:25:07 ON 03 JUN 2002)
               DEL HIS

     FILE 'BIOSIS' ENTERED AT 13:27:06 ON 03 JUN 2002
L1           545 S WAVEGUIDE# OR WAVE GUIDE#
L2        386612 S ?CARDIAC OR ?CARDIAL OR MYOGLOBIN# OR TROPONIN# OR CREATINE K
L3             4 S L1 AND L2
L4          3656 S MULTIANALYT? OR MULTI? (2A) ANALYT?
L5             8 S L1 AND L4
L6        499710 S ?ASSAY?
L7            48 S L1 AND L6
L8             0 S L7 AND L2
L9             8 S L7 AND L4
L10           12 S L3 OR L5 OR L9
L11         9531 S ?ANALYTE?
L12           37 S L1 AND L11
L13            0 S L12 AND L2
L14           20 S L12 AND L6
L15           25 S L10 OR L14

     FILE 'BIOSIS' ENTERED AT 13:31:18 ON 03 JUN 2002

=> d bib ab it 1-25

L15  ANSWER 1 OF 25  BIOSIS  COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN   2002:278001  BIOSIS
DN   PREV200200278001
TI   Integrated optic waveguide immunosensor.
AU   Reichert, W. Monty (1); Herron, James N.; Christensen, Douglas A.; Wang,
     Hsu-Kun
CS   (1) Durham, NC USA
     ASSIGNEE: University of Utah Research Foundation
PI   US 6350413 February 26, 2002
SO   Official Gazette of the United States Patent and Trademark Office Patents,
     (Feb. 26, 2002) Vol. 1255, No. 4, pp. No Pagination.
     http://www.uspto.gov/web/menu/patdata.html. e-file.
     ISSN: 0098-1133.
DT   Patent
LA   English
AB   A step-gradient composite waveguide for evanescent sensing in
     fluorescent binding assays comprises a thick substrate layer
     having one or more thin film waveguide channels deposited
     thereon. In one embodiment, the substrate is silicon dioxide and the thin
     film is silicon oxynitride. Specific binding molecules having the property
     of binding with specificity to an analyte are immobilized on the
     surface of the thin film channels. In preferred embodiments, the composite
```

waveguide further includes light input coupling means integrally adapted to the thin film channels. Such light coupling means can be a grating etched into the substrate prior to deposition of the thin film, or a **waveguide** coupler affixed to the upper surface of the thin film. The **waveguide** coupler has a thick input **waveguide** of high refractive index which receives the laser light through one end and propagates it by total internal reflection. The propagated light is then coupled evanescently into the thin film **waveguide** across a spacer layer of precise thickness and having an index of refraction lower than either the input **waveguide** or the thin-film **waveguide**. The composite **waveguide** can be constructed by plasma vapor deposition of silicon oxynitride onto the silicon dioxide substrate, masking the channel **waveguides** with a photoresist, and using reactive ion etching to expose the substrate in the unmasked regions.

IT Major Concepts
Biochemistry and Molecular Biophysics; Equipment, Apparatus, Devices and Instrumentation

IT Methods & Equipment
integrated optic **waveguide** immunosensor: laboratory equipment

L15 ANSWER 2 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2002:268412 BIOSIS
DN PREV200200268412
TI **Multi-analyte** capillary immunosensor for the determination of hormones in human serum samples.
AU Petrou, P. S.; Kakabakos, S. E. (1); Christofidis, I.; Argitis, P.; Misiakos, K.
CS (1) Immunoassay Laboratory, IR-RP, NCSR 'Demokritos', 15310, Athens: skakab@mail.demokritos.gr Greece
SO Biosensors & Bioelectronics, (April, 2002) Vol. 17, No. 4, pp. 261-268. http://www.elsevier.com/locate/bios. print.
ISSN: 0956-5663.
DT Article
LA English
AB In this work we present the development of a **multi-analyte** immunosensor for the determination of follitropin, human chorionic gonadotropin and prolactin in human serum. The immunosensor is based on plastic capillaries. According to the methodology, discrete areas of the internal capillary surface are coated with different antibodies, which are highly specific for each one of the **analytes** to be determined. The sample that will be analyzed along with a mixture of **analyte**-specific biotinylated antibodies is introduced into the capillary. The coated and the detection antibodies react with different epitopes of the **analytes** in the sample to form a 'sandwich'. The detection is based on reaction of the immobilized biotinylated antibody with streptavidin labeled with R-phycoerythrin. The fluorescent areas formed were quantified by scanning the capillary with a light beam of appropriate wavelength. A light sensor placed at the end of the capillary detects the emitted photons, that are trapped and **waveguided** into the capillary walls. The **multi-analyte** immunosensor **assays** were characterized by high specificity and short analysis time. In addition, the results obtained by the **multi-analyte** optical capillary immunosensor were comparable to those obtained by immunofluorimetric **assays** performed in microtitration wells. Potential applications of the proposed immunosensor include determination of several **analyte** panels in a broad spectrum of disciplines such as endocrinology, hematology, and oncology.
IT Major Concepts

Blood and Lymphatics (Transport and Circulation); Endocrine System (Chemical Coordination and Homeostasis); Equipment, Apparatus, Devices and Instrumentation; Methods and Techniques
IT Parts, Structures, & Systems of Organisms
serum: blood and lymphatics
IT Chemicals & Biochemicals
R-phycoerythrin; **analyte**-specific biotinylated antibodies; chorionic gonadotropin; follitropin; prolactin; streptavidin
IT Methods & Equipment
hormone determination: **Bioassays**/Physiological Analysis, determination method; **multi-analyte** immunosensor: laboratory equipment; **multi-analyte** immunosensor **assays**: **Bioassays**/Physiological Analysis, immunologic method; plastic capillaries: NUNC A/S, laboratory equipment
IT Miscellaneous Descriptors
analysis time
ORGN Super Taxa
Hominidae: Primates, Mammalia, Vertebrata, Chordata, Animalia
ORGN Organism Name
human (Hominidae)
ORGN Organism Superterms
Animals; Chordates; Humans; Mammals; Primates; Vertebrates
RN 9002-61-3 (CHORIONIC GONADOTROPIN)
9002-68-0 (FOLLITROPIN)
9002-62-4 (PROLACTIN)
9013-20-1 (STREPTAVIDIN)

L15 ANSWER 3 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2002:225624 BIOSIS
DN PREV200200225624
TI Apparatus and methods for **multi-analyte** homogeneous fluoro-**immunoassays**.
AU Herron, James N.; Christensen, Douglas A.; Wang, Hsu-Kun (1); Caldwell, Karin; Janatova, Vera; Huang, Shao-Chie
CS (1) Salt Lake City, UT USA
ASSIGNEE: University of Utah Research Foundation
PI US 6316274 November 13, 2001
SO Official Gazette of the United States Patent and Trademark Office Patents, (Nov. 13, 2001) Vol. 1252, No. 2, pp. No Pagination. http://www.uspto.gov/web/menu/patdata.html. e-file. ISSN: 0098-1133.
DT Patent
LA English
AB Methods and apparatus for evanescent light **fluoroimmunoassays** are disclosed. The apparatus employs a planar **waveguide** with an integral semi-cylindrical lens, and has **multi-analyte** features and calibration features, along with improved evanescent field intensity. A preferred embodiment of the biosensor and **assay** method have patches of capture molecules each specific for a different **analyte** disposed adjacent within a single reservoir. The capture molecules are immobilized to the patches on the **waveguide** surface by site-specific coupling of thiol groups on the capture molecules to photo-affinity crosslinkers which in turn are coupled to the **waveguide** surface or to a non-specific-binding-resistant coating on the surface. The patches of different antibodies are produced by selectively irradiating a portion of the **waveguide** surface during the process of coupling the photo-affinity crosslinkers the selective irradiation involving a mask, a laser light source, or the like.
IT Major Concepts
Equipment, Apparatus, Devices and Instrumentation; Methods and

Techniques
IT Methods & Equipment
integral semi-cylindrical lens: equipment; **multi-analyte** homogeneous fluoro-**immunoassay**: **bioassay** method; **multi-analyte** homogeneous fluoro-**immunoassay** apparatus: laboratory equipment; planar **waveguide**: equipment

L15 ANSWER 4 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2002:171039 BIOSIS
DN PREV200200171039
TI Optical disk-based **assay** devices and methods.
AU Virtanen, Jorma
ASSIGNEE: Burstein Technologies, Inc.
PI US 6342349 January 29, 2002
SO Official Gazette of the United States Patent and Trademark Office Patents, (Jan. 29, 2002) Vol. 1254, No. 5, pp. No Pagination. http://www.uspto.gov/web/menu/patdata.html. e-file. ISSN: 0098-1133.
DT Patent
LA English
AB Optical disk-based **assay** devices and methods are described, in which **analyte**-specific signal elements are disposed on an optical disk substrate. In preferred embodiments, the **analyte** -specific signal elements are disposed readably with the disk's tracking features. Also described are cleavable signal elements particularly suitable for use in the **assay** device and methods. Binding of the chosen **analyte** simultaneously to a first and a second **analyte**-specific side member of the cleavable signal element tethers the signal-responsive moiety to the signal element's substrate-attaching end, despite subsequent cleavage at the cleavage site that lies intermediate the first and second side members. The signal responsive moiety reflects, absorbs, or refracts incident laser light. Described are nucleic acid hybridization **assays**, nucleic acid sequencing, **immunoassays**, cell counting **assays**, and chemical detection. Adaptation of the **assay** device substrate to function as an optical **waveguide** permits **assay** geometries suitable for continuous monitoring applications.
IT Major Concepts
Clinical Chemistry (Allied Medical Sciences)
IT Methods & Equipment
optical disk-based **assay** devices: laboratory equipment; optical-disk-based **assay** method: **bioassay** method

L15 ANSWER 5 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2002:161762 BIOSIS
DN PREV200200161762
TI Apparatus for multichannel fluorescent **immunoassays**.
AU Herron, James N.; Christensen, Douglas A.; Caldwell, Karin D.; Janatova , Vera (1); Huang, Shao-Chie; Wang, Hsu-Kun
CS (1) Prague Czech Republic
ASSIGNEE: University of Utah Research Foundation
PI US 6340598 January 22, 2002
SO Official Gazette of the United States Patent and Trademark Office Patents, (Jan. 22, 2002) Vol. 1254, No. 4, pp. No Pagination. http://www.uspto.gov/web/menu/patdata.html. e-file. ISSN: 0098-1133.
DT Patent
LA English
AB Methods and apparatus for evanescent light **fluoroimmunoassays**

are disclosed. The apparatus employs a planar **waveguide** and optionally has multi-well features and improved evanescent field intensity. The preferred biosensor and **assay** method have the capture molecules immobilized to the **waveguide** surface by site-specific coupling chemistry. Additionally, the coatings used to immobilize the capture molecules provide reduced non-specific protein adsorption.

IT Major Concepts
Biochemistry and Molecular Biophysics; Equipment, Apparatus, Devices and Instrumentation; Methods and Techniques

IT Methods & Equipment
apparatus for multichannel fluorescent **immunoassays**: laboratory equipment; evanescent light **fluoroimmunoassays**: analytical method, biochemical method; **multichannel** fluorescent **immunoassays**: **analytical** method, biochemical method

L15 ANSWER 6 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2001:524966 BIOSIS
DN PREV200100524966
TI Oscillation apparatus and methods for **multi-analyte** homogeneous fluoro-**immunoassays**.
AU Herron, James N.; Christensen, Douglas A.; Miles, Scott D. (1)
CS (1) Sandy, UT USA
ASSIGNEE: University of Utah Research Foundation
PI US 6242267 June 05, 2001
SO Official Gazette of the United States Patent and Trademark Office Patents, (June 5, 2001) Vol. 1247, No. 1, pp. No Pagination. e-file. ISSN: 0098-1133.
DT Patent
LA English
AB An apparatus and method for rapidly analyzing samples for **analytes** of interest by an homogeneous immunofluorescence **assay**. The apparatus includes a sample test cartridge having a high control sample section, a low control sample section, and at least one test sample section. Each of these sections contain at least one pre-loaded reagent housed in a well within the cartridge wherein the low control sample section contains a known low amount of an **analyte** of interest and the high control sample section contains a known high amount of an **analyte** of interest. The cartridge includes a biosensor comprising a planar **waveguide** having first and second parallel plane surfaces and an edge extending between them, the edge having a receiving region for receiving a light beam. Each of the high control sample section, the low control sample section, and the test sample control sections have a well which includes a **waveguide** surface, wherein the contents of each section contacts capture molecules immobilized on the **waveguide** surface. The capture molecules are configured to specifically bind a chosen **analyte** and fluoresce when interacting with light passing through the **waveguide** surface. The concentration of said **analyte** of interest in said sample fluid is determined by a comparison of intensities of fluorescence of between said capture molecule areas of said sample capture molecule well, said low control capture molecule well, and said high control capture molecule well.
IT Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques
IT Chemicals & Biochemicals
analytes
IT Methods & Equipment
homogeneous immunofluorescence **assay**: analytical method,

immunologic method; oscillation apparatus: laboratory equipment

L15 ANSWER 7 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2001:402088 BIOSIS
DN PREV200100402088
TI Optical disk-based **assay** devices and methods.
AU Virtanen, Jorma (1)
CS (1) Irvine, CA USA
ASSIGNEE: Burstein Technologies, Inc.
PI US 6200755 March 13, 2001
SO Official Gazette of the United States Patent and Trademark Office Patents, (Mar. 13, 2001) Vol. 1244, No. 2, pp. No Pagination. e-file. ISSN: 0098-1133.
DT Patent
LA English
AB Optical disk-based **assay** devices and methods are described, in which **analyte**-specific signal elements are disposed on an optical disk substrate. In preferred embodiments, the **analyte** -specific signal elements are disposed readably with the disk's tracking features. Also described are cleavable signal elements particularly suitable for use in the **assay** device and methods. Binding of the chosen **analyte** simultaneously to a first and a second **analyte**-specific side member of the cleavable signal element tethers the signal-responsive moiety to the signal element's substrate-attaching end, despite subsequent cleavage at the cleavage site that lies intermediate the first and second side members. The signal responsive moiety reflects, absorbs, or refracts incident laser light. Described are nucleic acid hybridization **assays**, nucleic acid sequencing, **immunoassays**, cell counting **assays**, and chemical detection. Adaptation of the **assay** device substrate to function as an optical **waveguide** permits **assay** geometries suitable for continuous monitoring applications.
IT Major Concepts
Biochemistry and Molecular Biophysics; Equipment, Apparatus, Devices and Instrumentation; Methods and Techniques
IT Methods & Equipment
optical disk-based **assay**: analytical method; optical disk-based **assay** device: equipment

L15 ANSWER 8 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2001:339141 BIOSIS
DN PREV200100339141
TI Methods and apparatus for **myocardial** revascularization.
AU Ben-Haim, Shlomo (1); Yaron, Uri
CS (1) Haifa Israel
ASSIGNEE: Biosense, Inc.
PI US 6171303 January 09, 2001
SO Official Gazette of the United States Patent and Trademark Office Patents, (Jan. 9, 2001) Vol. 1242, No. 2, pp. No Pagination. e-file. ISSN: 0098-1133.
DT Patent
LA English
AB An elongate probe for providing irradiation treatment of the heart, the probe having a distal end for engaging heart tissue of a subject, including a **waveguide**, which conveys radiation to the heart tissue; and a sensor, adjacent the distal end of the probe, which generates signals for use in controlling the treatment.
IT Major Concepts
Surgery (Medical Sciences); Methods and Techniques
IT Methods & Equipment

irradiation elongate probe: medical equipment; **myocardial** revascularization: therapeutic method

L15 ANSWER 9 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2001:189701 BIOSIS
DN PREV200100189701
TI System for simultaneously conducting multiple ligand binding **assays**.
AU Obremski, Robert J. (1); Silzel, John W.
CS (1) Yorba Linda, CA USA
ASSIGNEE: Beckman Coulter, Inc.
PI US 6110749 August 29, 2000
SO Official Gazette of the United States Patent and Trademark Office Patents, (Aug. 29, 2000) Vol. 1237, No. 5, pp. No Pagination. e-file. ISSN: 0098-1133.
DT Patent
LA English
AB A system for simultaneously conducting multiple ligand **assays** on a sample potentially containing target **analytes** uses as a detector a **waveguide** having a planar surface with a plurality of probes of known recognition to the target **analytes** thereon. The probes are in discrete areas on the **waveguide**. A sample containing target **analyte** is treated with a light-responsive compound such that it binds to the target **analyte** to form a conjugate and the conjugate is applied to the probes on the **waveguide**. A laser light is passed into the planar surface of the **waveguide** at a plurality of different locations, by causing relative movement between the **waveguide** and the laser light, so that evanescent waves radiate from the **waveguide**. Where conjugate has attached to a probe, there is emission of light different from that emitted by a probe without conjugate attached thereto.
IT Major Concepts
Equipment, Apparatus, Devices and Instrumentation; Human Medicine (Medical Sciences)
IT Methods & Equipment
multiple ligand binding **assay** system: laboratory equipment

L15 ANSWER 10 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2001:143241 BIOSIS
DN PREV200100143241
TI Apparatus and method of **myocardial** revascularization using ultrasonic pulse-echo distance ranging.
AU Kesten, Randy J.
ASSIGNEE: Cardiogenesis Corporation, Sunnyvale, CA, USA
PI US 6086534 July 11, 2000
SO Official Gazette of the United States Patent and Trademark Office Patents, (July 11, 2000) Vol. 1236, No. 2, pp. No Pagination. e-file. ISSN: 0098-1133.
DT Patent
LA English
AB An apparatus and method of intraoperative **myocardial** revascularization of the myocardium of the heart of a patient. A catheter apparatus comprising an elongated catheter, an elongated laser **wave guide** slidably disposed within a lumen of the catheter, and an ultrasonic transducer secured to the distal end of the elongated laser **wave guide**, is inserted into the patient. The distal end of the lasing apparatus is guided to the portion of the patient's heart wall in which channels will be formed, and the ultrasonic transducer is activated to create brief pulses of ultrasonic energy. The transducer receives a returned ultrasonic echo from the heart

wall. The ultrasonic echo is processed by signal processing elements. The processed ultrasonic echoes are displayed to show the distance between the **epicardial** and **endocardial** surfaces of the portion of the heart wall in which the revascularization energy is to be discharged, and the distance between the operative distal end of the **myocardial** revascularization device and such **endocardial** and **epicardial** surfaces. After distance measurements have been performed, channels are formed in the heart wall.

IT Major Concepts
Equipment, Apparatus, Devices and Instrumentation; Cardiovascular Medicine (Human Medicine, Medical Sciences); Surgery (Medical Sciences)

IT Methods & Equipment
catheter apparatus: medical equipment; intraoperative **myocardial** revascularization: therapeutic method; ultrasonic pulse-echo distance ranging

L15 ANSWER 11 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2001:116227 BIOSIS
DN PREV200100116227
TI Simultaneous detection of six biohazardous agents using a planar **waveguide** array biosensor.
AU Rowe-Taitt, Chris A.; Hazzard, James W.; Hoffman, Karen E.; Cras, John J.; Golden, Joel P.; Ligler, Frances S. (1)
CS (1) Center for Bio/Molecular Science and Engineering, Naval Research Laboratory, Code 6900, Washington, DC, 20375-5348: fligler@cbmse.nrl.navy.mil USA
SO Biosensors & Bioelectronics, (December, 2000) Vol. 15, No. 11-12, pp. 579-589. print.
ISSN: 0956-5663.
DT Article
LA English
SL English
AB Recently, we demonstrated that an array biosensor could be used with cocktails of fluorescent antibodies to perform three **assays** simultaneously on a single substrate, and that multiple samples could be analyzed in parallel. We extend this technology to demonstrate the simultaneous analysis of six samples for six different hazardous **analytes**, including both bacteria and protein toxins. The level of antibody cross-reactivity is explored, revealing a possible common epitope in two of the toxins. A panel of environmental interferents was added to the samples; these interferents neither prevented the detection of the **analytes** nor caused false-positive responses.

IT Major Concepts
Equipment, Apparatus, Devices and Instrumentation; Methods and Techniques; Toxicology

IT Chemicals & Biochemicals
cholera toxin: Calbiochem, biohazardous agent, detection, toxin; enterotoxin B: Toxin Technology, biohazardous agent, detection, toxin; ricin: biohazardous agent, detection, toxin

IT Methods & Equipment
planar **waveguide** array biosensor: equipment

ORGN Super Taxa
Endospore-forming Gram-Positives: Eubacteria, Bacteria, Microorganisms; Gram-Negative Aerobic Rods and Cocci: Eubacteria, Bacteria, Microorganisms; Micrococcaceae: Gram-Positive Cocci, Eubacteria, Bacteria, Microorganisms; Vibrionaceae: Facultatively Anaerobic Gram-Negative Rods, Eubacteria, Bacteria, Microorganisms

ORGN Organism Name
Bacillus anthracis (Endospore-forming Gram-Positives): biohazardous agent, pathogen; Brucella abortus (Gram-Negative Aerobic Rods and

Cocci): biohazardous agent, pathogen; Francisella tularensis (Gram-Negative Aerobic Rods and Cocci): biohazardous agent, pathogen; Staphylococcus aureus (Micrococcaceae): pathogen; Vibrio cholerae (Vibrionaceae): pathogen

ORGN Organism Superterms
Bacteria; Eubacteria; Microorganisms

L15 ANSWER 12 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2000:472737 BIOSIS
DN PREV200000472737
TI Ultrasensitive **multianalyte immunoassays**: The synergy between planar **waveguide**- and microarray technology.
AU Schick, E. (1); Pawlak, M. (1); Schurmann, E. (1); Ehrat, M. (1)
CS (1) Zeptosens AG, Benkenstrasse 254, CH-4108, Witterswil Switzerland
SO European Biophysics Journal, (2000) Vol. 29, No. 4-5, pp. 379. print.
Meeting Info.: 3rd European Biophysics Congress Munchen, Germany September 09-13, 2000
ISSN: 0175-7571.
DT Conference
LA English
SL English
IT Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques
IT Chemicals & Biochemicals
interleukin-2; interleukin-4; interleukin-6
IT Methods & Equipment
ultrasensitive **multianalyte immunoassay**: **analytical** method
IT Miscellaneous Descriptors
microarray technology; planar **waveguide** technology; Meeting Abstract

L15 ANSWER 13 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2000:393031 BIOSIS
DN PREV200000393031
TI A ganglioside-based **assay** for cholera toxin using an array biosensor.
AU Rowe-Taitt, C. A.; Cras, J. J.; Patterson, C. H.; Golden, J. P.; Ligler, F. S. (1)
CS (1) Center for Bio/Molecular Science and Engineering, Naval Research Laboratory, Washington, DC, 20375 USA
SO Analytical Biochemistry, (May 15, 2000) Vol. 281, No. 1, pp. 123-133. print.
ISSN: 0003-2697.
DT Article
LA English
SL English
AB A rapid **assay** for cholera toxin (CT) has been developed using a fluorescence-based biosensor. This sensor was capable of analyzing six samples simultaneously for CT in 20 min with few manipulations required by the operator. The biochemical **assays** utilized a ganglioside-"capture" format: ganglioside GM1, utilized for capture of **analyte**, was immobilized in discrete locations on the surface of the optical **waveguide**. Binding of CT to immobilized GM1 was demonstrated with direct **assays** (using fluorescently labeled CT) and "sandwich" **immunoassays** (using fluorescently labeled tracer antibodies). Limits of detection for CT were 200 ng/ml in direct **assays** and 40 ng/ml and 1 mug/ml in sandwich-type **assays** performed using rabbit and goat tracer antibodies. Binding of CT to other glycolipid capture reagents was also observed. While significant CT

binding was observed to loci patterned with GD1b, Gb3, and Gb4, CT did not bind significantly to immobilized GT1b at the concentrations tested. This is the first description of such a non-antibody-based recognition system in a multi-specific planar array sensor.

IT Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques

IT Chemicals & Biochemicals
cholera toxin: Calbiochem, toxin; ganglioside GM1

IT Methods & Equipment
ELISA: detection method, detection/labeling techniques; array biosensor: equipment; capture reagent patterning: sample preparation method, specimen preparation techniques; ganglioside-based **assay**: activity **assays**, analytical method; goniometry: Analysis/Characterization Techniques: CB, analytical method; sandwich **immunoassay**: activity **assays**, analytical method; sensor substrate preparation: sample preparation method, specimen preparation techniques

RN 37758-47-7Q (GANGLIOSIDE GM1)
104443-62-1Q (GANGLIOSIDE GM1)

L15 ANSWER 14 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2000:341945 BIOSIS
DN PREV200000341945
TI Automated fiber optic biosensor for multiplexed **immunoassays**.
AU King, Keeley D.; Vanniere, Jessica M.; LeBlanc, Jennifer L.; Bullock, Karen E.; Anderson, George P. (1)
CS (1) Center for Bio/Molecular Science and Engineering, Naval Research Laboratory, Washington, DC, 20375-5348 USA
SO Environmental Science & Technology, (July 1, 2000) Vol. 34, No. 13, pp. 2845-2850. print.
ISSN: 0013-936X.
DT Article
LA English
SL English
AB The **multianalyte** capability of the RAPTOR, a rapid, automatic, and portable fiber optic fluorimeter, was demonstrated. Employing evanescent wave illumination on polystyrene fiber optic **waveguides**, the RAPTOR performed fluorescent **immunoassays** for Bacillus globigii spores, ovalbumin, Erwinia herbicola, and MS2 coliphage. During a 4-day laboratory trial **assaying** 144 blind samples, the RAPTOR demonstrated detection of 105 cfu/mL B. globigii, 107 cfu/mL E. herbicola, and 109 pfu/mL MS2; ovalbumin detection was less favorable than expected due to sample degradation. **Assays** were completed in 10 min with no sample preprocessing. No false positives were identified. Antigen carryover between coupons was examined but was not found to elicit a notable response for any **analytes**, except B. globigii. Finally, **assay** results obtained after reagent and **waveguides** had completed 30 negative (buffer) cycles were compared with standard **assay** results achieved with fresh reagent and **waveguides** to determine whether antigen detection would decrease using cycled reagent or optical probes. Detection efficacy proved to be unaffected by the use of cycled versus fresh probes or reagent.

IT Major Concepts
Biochemistry and Molecular Biophysics; Pollution Assessment Control and Management; Toxicology

IT Chemicals & Biochemicals
ovalbumin: toxin

IT Methods & Equipment
RAPTOR: automated fiber optic biosensor, equipment; fluorescent **immunoassay**: detection method

IT Miscellaneous Descriptors
environmental contamination: biologica threats
ORGN Organism Name
Bacillus globigii: spore; Erwinia herbicola; MS2 phage

L15 ANSWER 15 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2000:156206 BIOSIS
DN PREV200000156206
TI Array biosensor for detection of biohazards.
AU Rowe-Taitt, Chris A.; Golden, Joel P.; Feldstein, Mark J.; Cras, John J.; Hoffman, Karen E.; Ligler, Frances S. (1)
CS (1) Center for Bio/Molecular Science and Engineering, Naval Research Laboratory, Washington, DC, 20375-5348 USA
SO Biosensors & Bioelectronics., (Jan., 2000) Vol. 14, No. 10-11, pp. 785-794.
ISSN: 0956-5663.
DT Article
LA English
SL English
AB A fluorescence-based biosensor has been developed for simultaneous analysis of multiple samples for multiple biohazardous agents. A patterned array of antibodies immobilized on the surface of a planar **waveguide** is used to capture antigen present in samples; bound **analyte** is then quantified by means of fluorescent tracer antibodies. Upon excitation of the fluorophore by a small diode laser, a CCD camera detects the pattern of fluorescent antibody:antigen complexes on the **waveguide** surface. Image analysis software correlates the position of fluorescent signals with the identity of the **analyte** . This array biosensor has been used to detect toxins, toxoids, and killed or non-pathogenic (vaccine) strains of pathogenic bacteria. Limits of detection in the mid-ng/ml range (toxins and toxoids) and in the 103-106 cfu/ml range (bacterial **analytes**) were achieved with a facile 14-min off-line **assay**. In addition, a fluidics and imaging system has been developed which allows automated detection of staphylococcal enterotoxin B (SEB) in the low ng/ml range.
IT Major Concepts
Equipment, Apparatus, Devices and Instrumentation; Toxicology
IT Chemicals & Biochemicals
biohazardous material: detection, toxin; fluorophore; staphylococcal enterotoxin B: detection, toxin; toxins; tracer antibodies
IT Methods & Equipment
CCD camera: equipment; array biosensor: equipment; circular dichroism: analytical method, spectroscopic techniques: CB; diode laser: equipment; planar **waveguide**
IT Miscellaneous Descriptors
bioelectronics; biotechnology
RN 148-24-3 (TOXINS)

L15 ANSWER 16 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1999:10211 BIOSIS
DN PREV199900010211
TI A multi-band capillary immunosensor.
AU Misiakos, K. (1); Kakabakos, S. E.
CS (1) Microelectronics Inst., NCSR "Demokritos", 15310 Athens Greece
SO Biosensors & Bioelectronics, (Oct. 1, 1998) Vol. 13, No. 7-8, pp. 825-830.
ISSN: 0956-5663.
DT Article
LA English
AB In the present work we propose a new optical immunosensor based on capillary geometry and capable of **multianalyte** determinations.

The device is made of a polystyrene capillary tube. The inner walls of the capillary are segmented into distinct bands which are coated with appropriate binding molecules. Following excitation, some of the fluorescent photons emitted by the label are trapped and **waveguided** into the capillary walls provided they are launched towards the walls and within the critical angle. Here, Europium-labeled streptavidin reacted with different amounts of biotinylated bovine serum albumin immobilized onto each one of the bands. Due to the small inner volume of the capillary and the **multianalyte** feature we expect that the proposed device can be used for fast and inexpensive **assays**.

IT Major Concepts
Biochemistry and Molecular Biophysics; Equipment, Apparatus, Devices and Instrumentation; Methods and Techniques

IT Chemicals & Biochemicals
biotinylated bovine serum albumin: Sigma; europium; europium-labeled streptavidin: CyberFluor; proteins: analysis

IT Methods & Equipment
immunoassays: Detection/Labeling Techniques, analytical method; immunosensors: equipment, uses; multi-band capillary immunosensor: equipment, uses; optical immunosensor: equipment, uses; polystyrene capillary tube: equipment

IT Miscellaneous Descriptors
biotechnology; instrumentation

RN 9003-53-6 (POLYSTYRENE)
7440-53-1 (EUROPIUM)
9013-20-1 (STREPTAVIDIN)

L15 ANSWER 17 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1998:263343 BIOSIS
DN PREV199800263343
TI Optical immunoprobe development for multiresidue monitoring in water.
AU Brecht, A. (1); Klotz, A.; Barzen, C.; Gauglitz, G.; Harris, R. D.; Quigley, G. R.; Wilkinson, J. S.; Sztajnbok, P.; Abuknesha, R.; Gascon, J.; Oubina, A.; Barcelo, D.
CS (1) Inst. Physiol. Chem., Univ. Tuebingen, 72076 Tuebingen Germany
SO Analytica Chimica Acta, (April 24, 1998) Vol. 362, No. 1, pp. 69-79. ISSN: 0003-2670.
DT Article
LA English
AB Aquifers used for drinking water production require regular monitoring for organic pollutants. Pollutant levels and pollutant patterns may change rapidly especially in surface water. Monitoring systems capable of unattended and automated operation are desirable e.g. at pumping sites. In this paper we report on a study of the application of immunoanalytical techniques for flexible and automated multiresidue testing. A solid phase fluorescence **immunoassay** with immobilised **analyte** derivate and free, fluorescence labelled antibody is used. Two optical transducers were tested: A simple 'slab'-**waveguide** made of sheet glass and an integrated optical (IO) **waveguide**. Bulk fluorophore excitation was used to estimate the performance of each transducer. Both transducers allow an antibody surface coverage of less than 1permill of a monolayer of protein to be detected. The direct and covalent immobilisation of **analyte** derivates at the transducer surface for a binding inhibition **assay** approach is compared to a competitive **assay** with immobilisation of **analyte** derivates via an auxiliary antibody conjugate. The use of this auxiliary system allows the testing of different **analytes** at the same transducer surface. Atrazine was selected as a model **analyte** for the first trials. The ELISA type **assay** gives a test midpoint at

2.2 mug/l and an estimated limit of detection of 0.3 mug/l. The fluoroimmunoprobe with a binding inhibition **assay** has a test midpoint for atrazine at about 6 mug/l. In the competitive **assay** with an auxiliary antibody conjugate signal levels were reduced by a factor of two and competition of free atrazine was poor. Titration with free **analyte** derivate (atrazine caproic acid) confirmed that this may be optimised by changing the competing derivate.

IT Major Concepts
Equipment, Apparatus, Devices and Instrumentation; Methods and Techniques; Pollution Assessment Control and Management

IT Chemicals & Biochemicals
atrazine antibody: preparation; atrazine: Riedel de Haen, pesticide, free **analyte** derivative; caproic acid: free **analyte** derivative; cholic acid antibody: preparation; organic pollutants: analysis, multiresidue monitoring, pollutant

IT Methods & Equipment
binding inhibition **assay**: analysis/characterization techniques, analytical method; integrated optical **waveguide**: development, equipment, optical transducer, testing; optical immunoprobe: development, equipment; slab-**waveguide**: development, testing, optical transducer, equipment; solid phase fluorescence **immunoassay**: analysis/characterization techniques, analytical method; ELISA: analytical method, detection/labeling techniques

IT Miscellaneous Descriptors
multiresidue monitoring; water

RN 1912-24-9 (ATRAZINE)
81-25-4 (CHOLIC ACID)
142-62-1 (CAPROIC ACID)

L15 ANSWER 18 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1997:448669 BIOSIS
DN PREV199799747872
TI Hartman interferometer: Versatile integrated optic sensor for label-free, real-time quantification of nucleic acids, proteins, and pathogens.
AU Schneider, Bernard H. (1); Edwards, John G.; Hartman, Nile F.
CS (1) Photonic Sensors Systems, 430 Tenth St., Suite N-103, Atlanta, GA 30318 USA
SO Clinical Chemistry, (1997) Vol. 43, No. 9, pp. 1757-1763.
ISSN: 0009-9147.
DT Article
LA English
AB The Hartman interferometer, a proprietary integrated optic sensor, provides a basis for a broad range of biomedical diagnostics, including antibody-based and gene probe-based **assays**. As with other evanescent-wave optical sensors, the interferometer measures the refractive index change resulting from biomolecular binding on a **waveguide** surface. The exciting promise of evanescent-wave sensors lies, in general, in their potential to be used as label-free, real-time transducers that can operate in a true mix-and-read fashion and provide fast, quantitative results. One of the major issues facing their development, however, is creating a simple, low-cost configuration for **multianalyte** testing. The Hartman interferometer addresses this challenge by relying on linearly polarized light and a planar **waveguide** format, thereby avoiding the problems associated with circular polarization and channel **waveguides**. We report preliminary experiments that demonstrate the applicability of this sensor configuration to detection of a wide range of protein, nucleic acid, and pathogen **analytes**.
IT Major Concepts

Clinical Chemistry (Allied Medical Sciences); Infection; Methods and Techniques; Toxicology
IT Miscellaneous Descriptors
CLINICAL CHEMISTRY; DIAGNOSTIC METHOD; HARTMAN INTERFEROMETER; LABEL-FREE; METHODOLOGY; NUCLEIC ACID; OPTIC SENSOR; PATHOGEN **ANALYTE**; PATIENT; PROTEINS; QUANTIFICATION METHOD; REAL-TIME; SCHEMATIC
ORGN Super Taxa
Hominidae: Primates, Mammalia, Vertebrata, Chordata, Animalia
ORGN Organism Name
human (Hominidae)
ORGN Organism Superterms
animals; chordates; humans; mammals; primates; vertebrates

L15 ANSWER 19 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1997:428218 BIOSIS
DN PREV199799727421
TI Molecular orientation and distribution in **myoglobin** films immobilized on a variety of modified surfaces.
AU Gabbard, Elizabeth A.; Edmiston, Paul L.; Lee, John E.; Wood, Laurie L.; Saavedra, S. S.
CS Dep. Chemistry, Univ. Arizona, Tucson, AZ 85721 USA
SO Abstracts of Papers American Chemical Society, (1997) Vol. 214, No. 1-2, pp. ANYL 74.
Meeting Info.: 214th American Chemical Society National Meeting Las Vegas, Nevada, USA September 7-11, 1997
ISSN: 0065-7727.
DT Conference; Abstract
LA English
IT Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques
IT Chemicals & Biochemicals
HEME
IT Miscellaneous Descriptors
ANALYTICAL METHOD; ANGULAR DISTRIBUTION; BIOCHEMISTRY AND BIOPHYSICS; FILM IMMOBILIZATION; HEME PROTEIN; INTEGRATED OPTICAL **WAVEGUIDE** -ATTENUATED TOTAL REFLECTION SPECTROSCOPY; METHODOLOGY; MOLECULAR ORIENTATION; MONOLAYER FORMATION; **MYOGLOBIN**; SITE-DIRECTED INTERACTION; TOTAL INTERNAL REFLECTANCE FLUORESCENCE SPECTROSCOPY
RN 14875-96-8 (HEME)

L15 ANSWER 20 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1997:406958 BIOSIS
DN PREV199799713161
TI Label free optical immunoprobes for pesticide detection.
AU Brecht, A.; Gauglitz, G. (1)
CS (1) Univ. Tuebingen, Inst. Physical Theoretical Chemistry, Auf der Morgenstelle 8, D-72076 Tuebingen Germany
SO Analytica Chimica Acta, (1997) Vol. 347, No. 1-2, pp. 219-233.
ISSN: 0003-2670.
DT Article
LA English
AB In environmental analysis immunological methods based on non covalent selective molecular interactions can be used as a sensitive tool. The label free detection of these interactions in real time allows simple, fast, and elegant approaches. Optical transducers are used for direct, label free immunoprobes with considerable success. For the detection of low molecular weight environmental **analytes** binding inhibition **assays** are common. Antibodies are mixed with the sample and antibody binding sites are blocked by the **analyte**. Subsequently

the concentration of free antibodies is quantified by binding to a transducer modified with a derivative of the **analyte**. The basic effects monitored by the transducers are an increase in refractive index or changes in surface adlayers. Accordingly the transducers can be described as micro-refractometers or micro-reflectometers. A large number has been published in recent years (G. Gauglitz, Opto-Chemical and Opto-Immuno Sensors, in: H. Baltes, W. Gopel, J. Hesse (Eds.), Sensor Update, VCH Verlagsgesellschaft, Weinheim, 1996.) Results from four optical transducers out of this variety (grating coupler, channel **waveguide** interferometer, **waveguide** surface plasmon resonance, thin film reflectometry) applied to pesticide detection are compared. Test cycles below 15 min can be reached. Performance is limited by drift and noise of the transducers. Limits of detection reached are comparable for all of the transducers and reach values between 0.05 and 0.15 ppb under laboratory conditions. Application to environmental samples reveals problems with the sample matrix. The performance of these four devices and the potential for further application is discussed.

IT Major Concepts
Immune System (Chemical Coordination and Homeostasis); Methods and Techniques; Pest Assessment Control and Management; Pollution Assessment Control and Management

IT Miscellaneous Descriptors
ANALYTICAL METHOD; DIRECT OPTICAL DETECTION; ENVIRONMENTAL SAMPLES; LABEL FREE OPTICAL IMMUNOPROBES; METHODOLOGY; MICRO-REFLECTOMETRY; MICRO-REFRACTOMETRY; PESTICIDE DETECTION; PESTICIDE MONITORING; POLLUTION; REAGENT

L15 ANSWER 21 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1997:254865 BIOSIS
DN PREV199799554068
TI New detection method for atrazine pesticides with the optical **waveguide** Mach-Zehnder immunosensor.
AU Schipper, E. F. (1); Bergevoet, A. J. H.; Kooyman, R. P. H.; Greve, J.
CS (1) MESA Res. Inst., Dep. Applied Physics, Bio-Interface Group, Univ. Twente, PO Box 217, 7500 AE Enschede Netherlands
SO Analytica Chimica Acta, (1997) Vol. 341, No. 2-3, pp. 171-176. ISSN: 0003-2670.
DT Article
LA English
AB Concentrations of **analytes** can be determined within a few minutes using on-line analysis of the immunobinding kinetics in a solid phase **immunoassay**. This approach has been applied to the detection of atrazine. Atrazine is detected, at concentrations around the European Community limit (0.1 mu-g/l) by a competitive **assay**. To this end, the two channels of a Mach-Zehnder **waveguide** sensor are used simultaneously in a difference measurement. The advantage of this way of measuring is discussed with the atrazine measurements.

IT Major Concepts
Apparatus; Devices and Instruments; Equipment; General Life Studies; Immune System (Chemical Coordination and Homeostasis); Methods and Techniques; Pest Assessment Control and Management

IT Chemicals & Biochemicals
ATRAZINE

IT Miscellaneous Descriptors
ANALYSIS; ANALYTICAL METHOD; ATRAZINE; DETECTION; INSTRUMENT; METHODOLOGY; OPTICAL **WAVEGUIDE** MACH-ZEHNDER IMMUNOSENSOR; PESTICIDE; PESTICIDES

RN 1912-24-9 (ATRAZINE)

L15 ANSWER 22 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

AN 1996:102153 BIOSIS
DN PREV199698674288
TI Femtomolar sensitivity using a channel-etched thin film **waveguide** fluoroimmunosensor.
AU Plowman, T. E.; Reichert, W. W. (1); Peters, C. R.; Wang, H. K.; Christensen, D. A.; Herron, J. N.
CS (1) Dep. Biomedical Eng., Duke Univ., Durham, NC 27708-0281 USA
SO Biosensors & Bioelectronics, (1996) Vol. 11, No. 1-2, pp. 149-160. ISSN: 0956-5663.
DT Article
LA English
AB A dual channel, evanescent **fluoroimmunoassay** format is used to detect femtomolar **analyte** concentrations (i.e. less than 1 part per trillion (w/ w)) on an etched channel siliconoxynitride thin film integrated optical **waveguide**. Two **assays** are used to demonstrate the dose-response behaviour of the sensor: (1) a direct **assay** of a fluorescently-labeled protein ligand binding to an immobilized protein receptor, and (2) an indirect sandwich **assay** of a non-fluorescent protein ligand binding to an immobilized protein receptor, as detected by the binding of a fluorescently-labeled secondary receptor protein. A red-emitting cyanine dye (Cy-5), which minimized background fluorescence and scatter losses of the **waveguide**, was used in both **assays**. To our knowledge, this is the first report of femtomolar sensitivity in an immunosensing instrument.
IT Major Concepts
Immune System (Chemical Coordination and Homeostasis); Methods and Techniques
IT Miscellaneous Descriptors
ANALYTICAL METHOD; EVANESCENT EXCITATION; INTEGRATED OPTICS

L15 ANSWER 23 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1992:138892 BIOSIS
DN BA93:73117
TI PLANAR **WAVEGUIDE** IMMUNOSENSOR WITH FLUORESCENT LIPOSOME AMPLIFICATION.
AU CHOQUETTE S J; LOCASCIO-BROWN L; DURST R A
CS NATL. INST. STANDARDS TECHNOL., GAITHERSBURG, MD. 20899.
SO ANAL CHEM, (1992) 64 (1), 55-60.
CODEN: ANCHAM. ISSN: 0003-2700.
FS BA; OLD
LA English
AB A regenerable planar **waveguide** immunosensor for the clinical **analyte** theophylline has been developed. Regeneration is accomplished under flow conditions using a moderate affinity antibody, and multiple analyses can be performed with a single **waveguide** sensor. Sensors capable of more than 15 sequential measurements have demonstrated better than 10% precision. The use of theophylline-labeled liposomes in this competitive **immunoassay** provides 1 order of magnitude greater signal enhancement over theophylline derivatized with fluorescein.
IT Miscellaneous Descriptors
THEOPHYLLINE **IMMUNOASSAY**
RN 58-55-9 (THEOPHYLLINE)

L15 ANSWER 24 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1991:360648 BIOSIS
DN BA92:48873
TI PRINCIPLES AND SENSITIVITIES OF INTEGRATED OPTICAL AND SURFACE PLASMON SENSORS FOR DIRECT AFFINITY SENSING AND IMMUNOSENSING.
AU LUKOSZ W

CS OPTICS LAB., SWISS FEDERAL INST. TEHNOL., 8093 ZURICH, SWITZERLAND.
SO BIOSENS BIOELECTRONICS, (1991) 6 (3), 215-226.
CODEN: BBIOE4. ISSN: 0956-5663.
FS BA; OLD
LA English
AB The analogy between guided modes in planar optical **waveguides** and surface plasmons is worked out. It explains that integrated optical (IO) and surface plasmon (SP) affinity sensors and immunosensors are based on the same physical effect: changes in the effective refractive index of the guided waves are induced by the interactions of their evanescent field with the **analyte** molecules binding specificially to reaction partners immobilized on the sensor surface. The sensitivities of IO and SP affinity sensors are derived - as analytical expressions - by perturbation theory; also their sensitivities to refractive index changes, i.e. as different refractometers. The sensitivities of IO sensors at .lambda. = 632.8 nm are compared with those of SP sensors with gold films at the same wavelength and silver films at .lambda. = 632.8 and 780 nm. The highest sensitivities are predicted for IO interferometric sensors.
IT Miscellaneous Descriptors
IMMUNOASSAY INTERFEROMETRY

L15 ANSWER 25 OF 25 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1989:275499 BIOSIS
DN BR37:496
TI PERMANENT PACEMAKER WITH VARIABLE FREQUENCY.
AU ANDERSEN C; OXHOJ H; ARNSBO P
CS KLINISK FYSIOL. AFDELING.
SO Ugeskr. Laeg., (1989) 151 (10), 640-641.
CODEN: UGLAAD. ISSN: 0041-5782.
FS BR; OLD
LA Danish
IT Miscellaneous Descriptors
HUMAN QT **WAVE-GUIDED** TYPE PIEZOELECTRIC TYPE RESPIRATION-GUIDED TYPE TEMPERATURE-GUIDED TYPE **MYOCARDIAL** -CONTRACTILITY GUIDED TYPE